THE JOURNAL
of the
Kansas Medical Society

VOL. XXXI TOPEKA, KANSAS, FEBRUARY, 1930 No. 2

Published Monthly under direction of the Council. Annual Subscription, $2. Single Copy, 20c.
700 Kansas Avenue, Topeka, Kansas

Entered as second-class matter May 2, 1914, at the Postoffice at Topeka, Kansas, under the Act of March 3, 1879. Accepted for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized on July 2, 1918.

CONTENTS

ORIGINAL ARTICLES

Electrocardiography in the Clinical Study of Heart Disease—H. E. Marchbanks, M.D., Pittsburg..... 40

Observations on Diverticula of the Colon—C. C. Nesselrode, M.D., Kansas City 62

The Interpretation of the Blood Wassermann Reaction in the Diagnosis of Latent and Late Syphilis—E. H. Terrill, M.D., Wichita 65

TUBERCULOSIS ABSTRACTS 69

EDITORIAL

Co-operation. 73

MISCELLANEOUS

Chips. 74

Council Meeting 76

Societies. 77

Deaths. 77

Medical School Notes 78

The Bacteriology of Infant Diet Materials 78

Call for the Eleventh Convention for the Revision of the Pharmacopoeia of the U. S. A. 78

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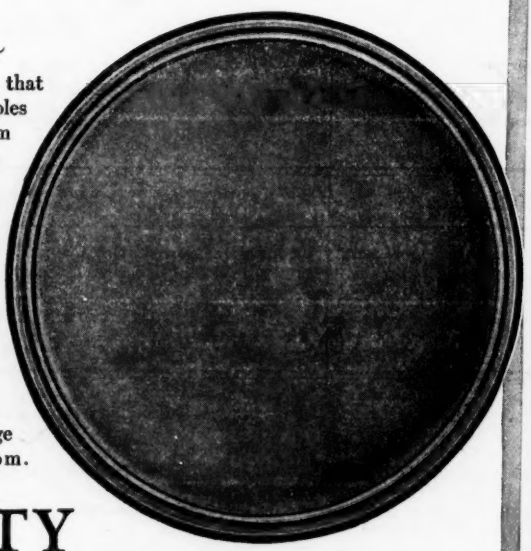

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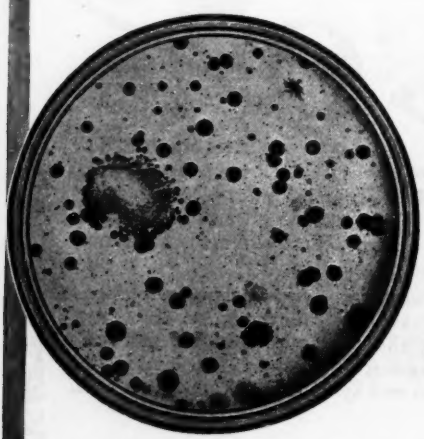

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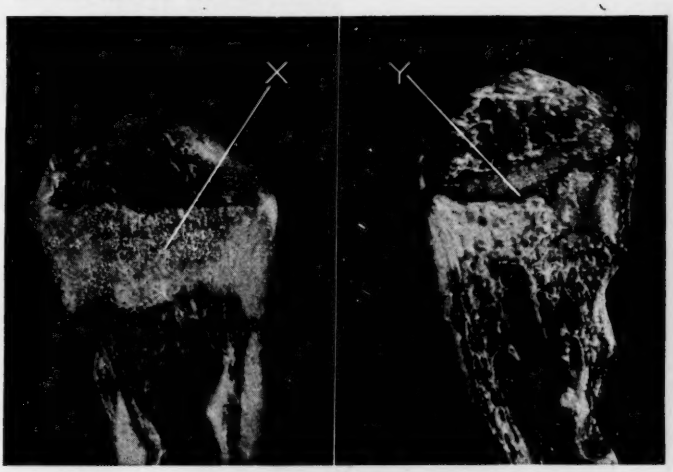

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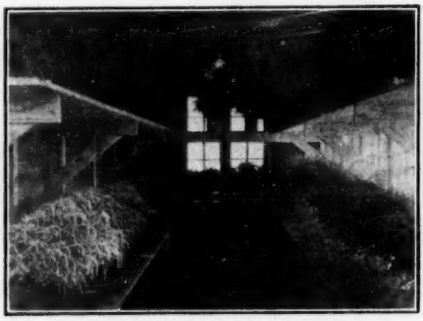

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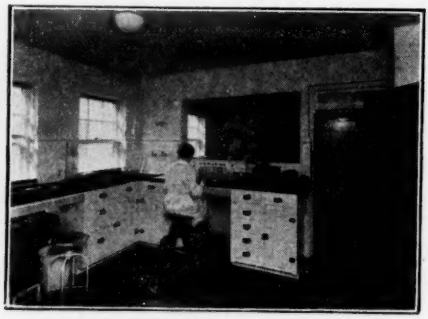

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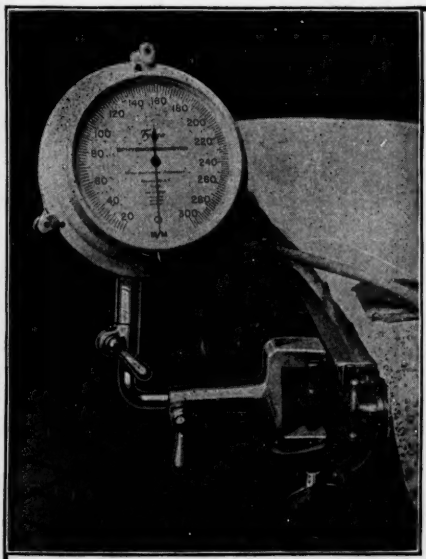

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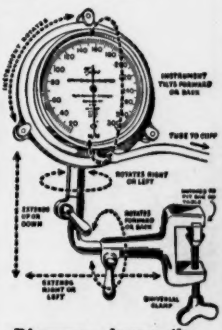

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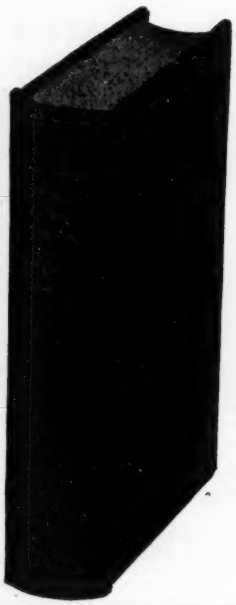

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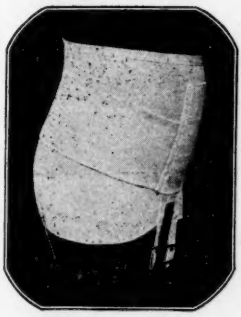

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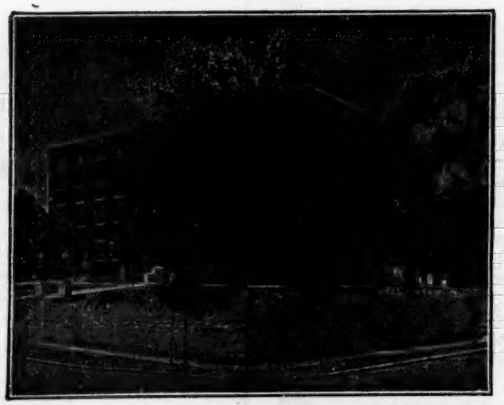

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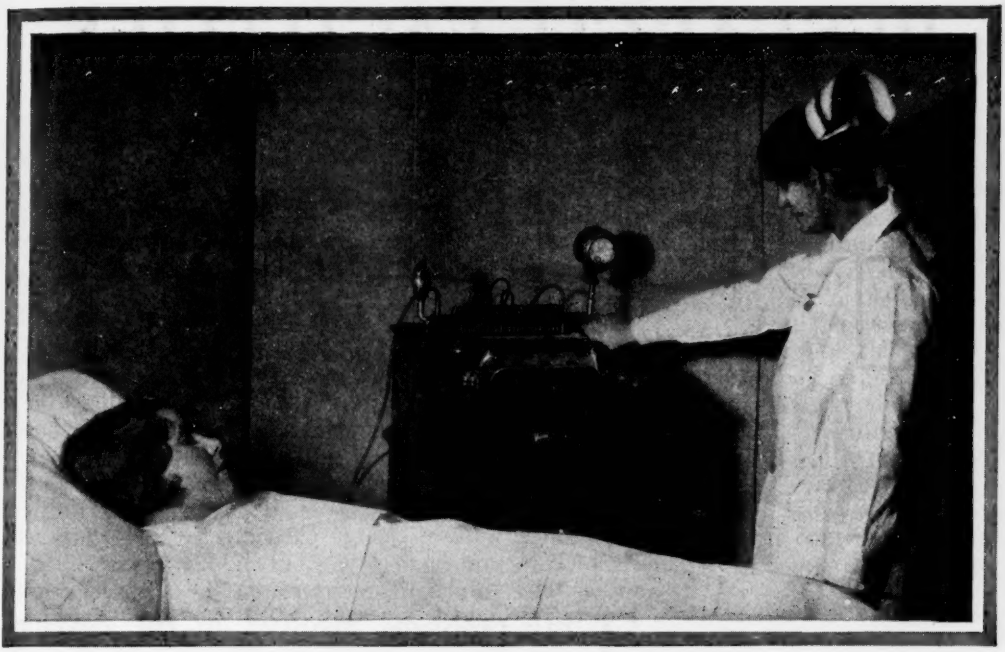

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"As a rule diathermy is indicated in acute pneumonia, especially so when the symptoms are becoming or already are alarming: the temperature is high, the patient is delirious, the pulse is extremely rapid, cyanosis is deep, the respiration rate is high, the breathing is very shallow, and the cough remains unproductive. Not infrequently in a pneumonia case with such alarming symptoms, after a few diathermy treatments an entire change of the picture takes place: cyanosis lessens, respiration becomes deeper, the quality of pulse improves, the rate decreases, the temperature is lowered, and the cough becomes productive. Auricular fibrillation that develops occasionally in similar pneumonias or other types of pneumonia where the toxemia is great, has been changed to a perfect normal rhythm after a few diathermy treatments."

You will value diathermy as an ally in your battles with pneumonia at this season, aside from the satisfaction derived from having utilized every proved therapeutic measure that present day medical science offers.

A reprint in full of the article above quoted, also reprints of other articles on this subject, will be sent on request.

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THE JOURNAL
of the
Kansas Medical Society

VOL. XXXI TOPEKA, KANSAS, FEBRUARY, 1930 No. 2

Electrocardiography in the Clinical Study of Heart Disease

H. E. MARCHBANKS, M.D., Pittsburg

Read before the annual meeting of the Kansas Medical Society, at Salina, Kan., May 7, 8 and 9, 1929.

I will not attempt to give a review of the literature on electrocardiography, but I do wish to say in the beginning that the books by Willius[1] of the Mayo Clinic, Pardee[2] of Cornell University, and Roth[3] of Columbia University, are three very helpful manuals for those interested in the study of this subject.

To a great extent the early expectations of the use of the electrocardiograph have not been met. The interest, however, in the study of the heart that is created by the use of the electrocardiograph has made it a most valuable instrument of precision. The electrocardiogram furnishes very definite information about the heart that gives most valuable diagnostic and prognostic aid. The diognostic aid is given in those conditions that can not well be made out by other methods.

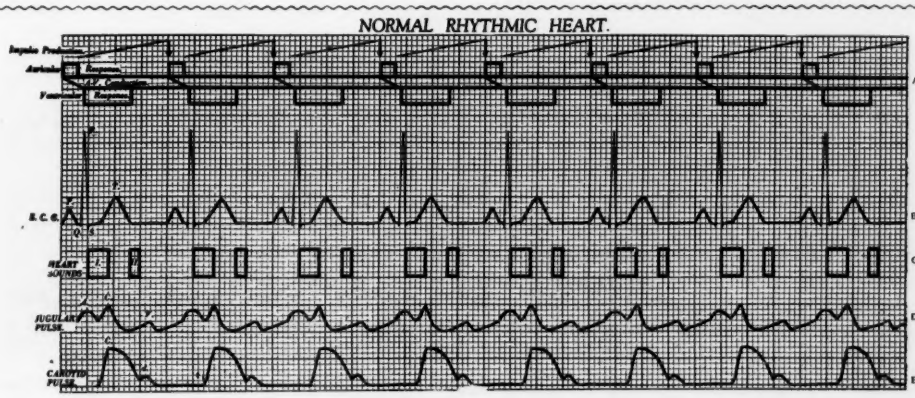


Fig. 1. Diagramatic representation from Page 63 of Dr. Irving R. Roth's book on "Cardiac Arrhythmias," of a normal record. Explanation by Roth.

(A) Mechanism: Rhythmic production of the cardiac impulse; rhythmic auricular responses; A-V conduction time=0.16 seconds. Rhythmic ventricular responses.

(B) E. C. G.: Groups of normal complexes recurring rhythmically. P-R interval=0.16 sec. Q-R-S interval=.04 seconds.

(C) Heart Sounds. (D) Jugular Pulse. (E) Carotid Pulse.

I will now try to explain a diagrammatic representation by Roth of a normal record. I believe this shows the various deflections better than a regular record. This shows the impulse beginning at the sinoauricular node and is carried through the auricle to the auriculoventricular node where it is transferred to the ventricle and through the ventricle to be lost. Then another impulse begins again in the sinoauricular node, etc.

This drawing also shows the relation of the sounds of the heart to the contractions of auricle and ventricle.

Here we have the P wave which represents the spread of the contraction in the auricle. This is a comparatively slow contraction.

We then get a pause which represents the time required for the impulse to pass through the auriculo-ventricular node. This space plus the time of the P wave is called the P R interval.

We next have the Q R S group which represents the time the ventricle is contracting. There is only a short time used for this, since the Purkinje tissue takes up the impulse and spreads it over the whole ventricle in a comparatively short interval—.05 to .07 second. Following this, while the intraventricular pressure is rising, the line of the record rests at

or near zero for a period and then the T wave is started. The T wave is perhaps the expression of relaxation in the ventricular muscle. This space is termed the S T interval and is from .24 to .28 second. Following the S is the first heart sound; the second sound follows the T.

As you remember, the five properties of the heart muscle are:

1. Rhythmicity,
2. Irritability,
3. Conductivity,
4. Contractility,
5. Tonicity.

The electrocardiogram is capable of demonstrating many of the defects in most of these properties. It is quite true that many times defects in the properties of the heart muscle can be diagnosed without the use of the record, yet frequently the diognosis is a guess unless an electrocardiogram has been made.

With this explanatory introduction, I will now come to the subject of my paper.

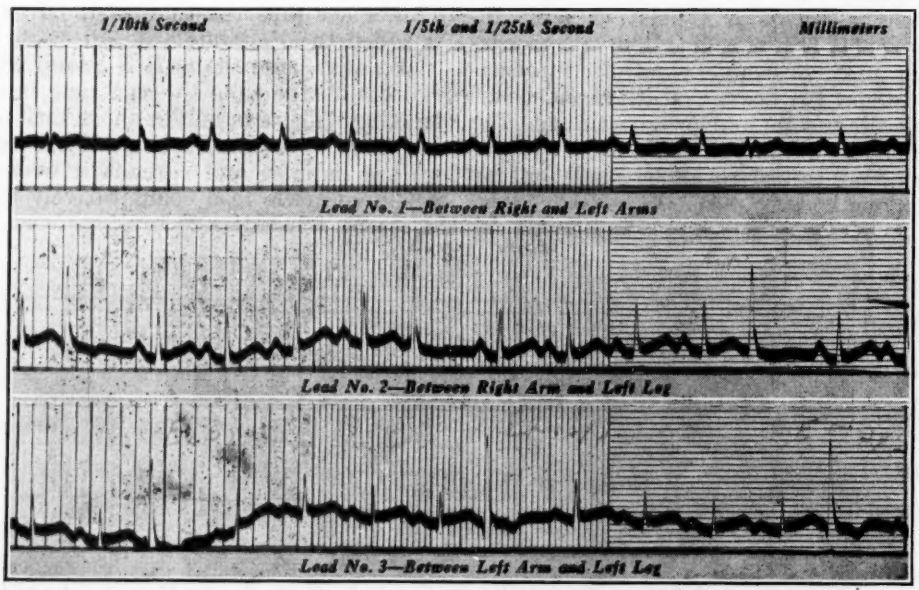

1/10th Second
1/5th and 1/25th Second
Millimeters
Lead No. 1—Between Right and Left Arms
Lead No. 2—Between Right Arm and Left Leg
Lead No. 3—Between Left Arm and Left Leg

Fig. 2. Electrocardiographic record showing premature contractions occurring every fifth beat in leads II and III. Patient is a woman 46 years of age. Rate 132.

I must admit that the subject is most inclusive, but I will restrict my remarks to a few of the more common and perhaps the most important clinical myocardial extrasytoles, paroxysmal tachycardia, auconditions, namely, the arrhythmias, including extrasystoles, auricular fibrillation, auricular flutter, bundle branch block, complete heart block, also angina pectoris and coronary disease.

Let me here review an outline of the arrhythmias:

1. Auricular arrhythmias, auricular extrasystoles, paroxysmal tachycardia, auricular incoordination, auricular fibrillation, auricular flutter.
2. Nodal extrasystoles.
3. Ventricular arrhythmias, ventricular extrasystoles, ventricular incoordination, bundle branch block.
4. True bradycardia.
5. Sinus arrhythmias.
6. Auriculo ventricular heart block, incomplete heart block, complete heart block, dissociation.
7. Other irregularities too infrequent to mention in a short discussion.

Extrasystoles are premature or ectopic beats that come through either from the ventricle or auricle or from the auriculo ventricular node. I will show hurriedly two or three slides merely to contrast them with the more serious condition, auricular fibrillation, which I will show next. Most of these cases are symptom free with the exception that they can at times feel these irregular beats.

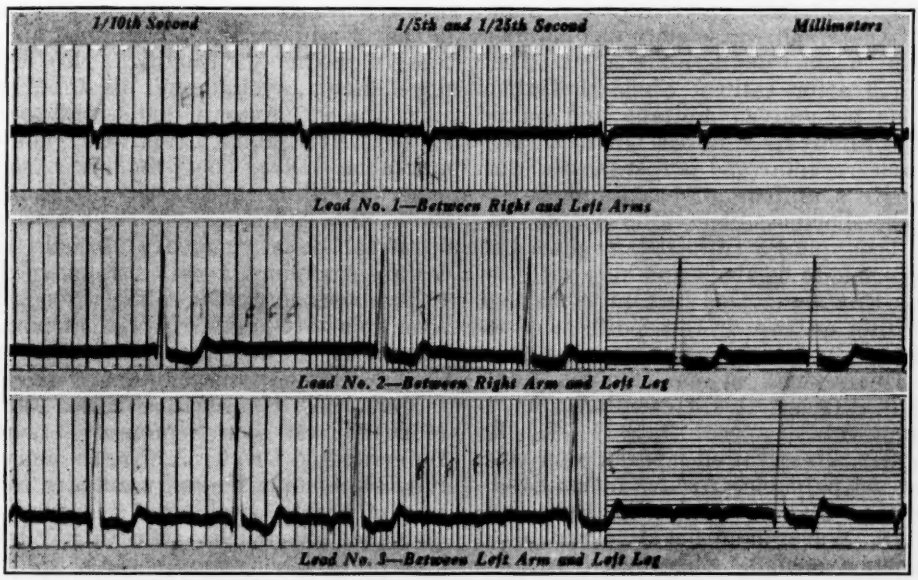
Throughout the paper I will give only

a brief history and the positive physical findings in order to save time and thereby be able to demonstrate more cases.

Auricular fibrillation is essentially due to any influence, toxic, nutritional, reflex, etc., which breaks up the simple, normal, single "circus" wave starting from the pace-maker by interferring with and blocking the propagation of the wave. The rhythm is wholly irregular. Dr. Spiro of California says that if one can not keep time with a pulse by the nodding of one's head then the arrhythmia is due to auricular fibrillation.

I will now show a group of auricular fibrillation cases:

Frank S., a miner, white, age 42. First seen October 31, 1927. Referred by Dr. perfectly well otherwise. Onset of symptoms about July, 1922, but he did not pay much attention to it. Findings were: Infected tonsils. (Out in 1924.) Heart, "beef heart." Loud blowing systolic murmurs over whole heart. Regular boiler-works noise. Difficult to make out the sounds over any valve. Rate 120, irregular. Some difficulty with respiration at times only. Liver not palpable. No ascites. No swelling. Urine normal. Blood pressure 110-80. Wassermann negative. Blood chemistry normal. Died a cardiac death March 6, 1929. *x*-Ray of heart January 15, 1929. An electrocardiogram made January 24, 1928, shows a typical auricular fibrillation.


1/10th Second
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Millimeters
Lead No. 1—Between Right and Left Arms
Lead No. 2—Between Right Arm and Left Leg
Lead No. 3—Between Left Arm and Left Leg

Fig. 4. Electrocardiogram showing coarse auricular fibrillation and right ventricular preponderance. Record made 1-24-28. See Fig. 3 for *x*-ray of heart of same patient made one year later. Patient a man 25 years old. Mr. B. G. He died March 6, 1929.

Benage. Complaining of weakness and shortness of breath. I was called only for the electrocardiographic interpretation, so did not get a complete history. He was seen by me, however, in 1923 and was diagnosed auricular fibrillation with mitral stenosis, at that time. No other findings noted.

B. G., business college student, male, white. Age 19 (in 1922). First seen December 15, 1922. Referred by Dr. C. A. Smith. Complaining of shortness of breath on exertion. Easily fatigued. Felt

Mrs. V. J. Housewife. White. Age 54. First seen January 31, 1928. Referred by Dr. Parrish. Complaining of shortness of breath. Edema. In November, 1927, she took sick and had not been well since then. Had shortness of breath at that time. Had been large for the past 30 years and not well for last several years. Could not eat for food seemed to crowd her heart. Well, except for obesity prior to these last few years. Mother of eleven children. Findings: Very cyanosed. Did not examine her well due to

her extreme illness. Could not make out much in chest for same reason. Pulse rate 104, wholly irregular. Respiration labored. Very cyanotic. Liver could not be made out. Abdomen large and apparently full of fluid. Edema of legs. Urine had 4+ albumen, casts and pus cells. Blood pressure was 100-85. Wassermann not done. Blood chemistry—CO_2, 24.5 vol. per cent. N. P. N. 60 mg. Uric acid 5.6 mg. Electrocardiographic record made January 31, 1928, shows auricular fibrillation. Died February 2, 1928, on the third hospital day without much change in condition at any time.

Mrs. J. R. K. White. Lives with daughter. Age 64. First seen August 27, 1926. Complaining of shortness of breath, cough and some cold in her chest. Has had some shortness of breath for a number of years, but worse since she had her cold in chest. Coughs quite a lot. This is worse after eating. Since that time she has been given digitalis and quinidine in fairly large doses, but her heart remains irregular and is fast most of the time. No symptoms of heart failure except the shortness of breath. She has always been quite a frail little woman, but always able to be about and help with the work. Findings: Has had quite marked bronchitis on two or three different occasions. Bronchial pneumonia last winter. Heart small in size. No murmurs. Sounds difficult to differentiate due to the high rate of speed. Rate 144. Wholly irregular. Respiration labored as a rule. Liver not palpable. Ascites none. Swelling none. Urine normal. Blood pressure 190-110. Wasermann negative and blood chemistry normal. Electrocardiographic record December 20, 1927, shows auricular fibrillation. At the present time she gets about the house. No edema. Rate between 120 and 140.

Mrs. E. P. Housekeeper, white. Age 76. First seen April 20, 1928. Complaining of shortness of breath, weakness, swollen legs, frequent, painful urination, nervousness, poor appetite. She began to feel badly soon after working in the garden about a week or 10 days before I saw her. Her daughter said she had had heart trouble for 20 years or more. Findings: Teeth out. Heart enlarged to left. Systolic murmur at apex. Sounds wholly irregular. Could not differentiate sounds well. Rate 144, irregular. Respiration labored, at times quite marked. Liver is very large, extending below the umbilicus. Some ascites. Very marked edema of legs and even of body up to umbilical region. Urine had small amount of albumen—it was 4+ at first. Blood pressure 180-120. Wassermann negative and blood chemistry within normal limits. Electrocardiographic record April 30, 1928, shows auricular fibrillation. She died November 26, 1928.

J. G. Works at steam shovel. White. Age 40. First seen October 6, 1926. Complaining of shortness of breath. Had gone through an acute heart attack in the Navy. This was perhaps acute rheumatic fever, although the record was not obtained. Had been fairly well until his attack in the navy. Findings: No infections. Heart, systolic and diastolic murmurs at apex. Accentuated second sound. Rate 72, irregular. Respiration not remarkable. Liver not tender. Ascites none. Swelling none. Urine negative. Blood pressure 124-80. Wassermann negative. Blood chemistry normal. Electrocardiographic record January 14, 1929, shows auricular fibrillation. Has been able to work fairly well at manual labor, but his auricular fibrillation continues.

Mrs. J. V. Housewife. White. Age 42 (1926). First seen September 14, 1926. Referred by Dr. C. A. Smith and Dr. Parrish. Complaining of weakness, shortness of breath, swelling of feet when up and about, headache, pain in left lower quadrant, cold clammy sweats. Had not been well for the past six months, and had been in bed for three months with the above symptoms. Had some chills and fever when she first took sick. Mother of nine children, youngest three and one-half years old. She had never been sick prior to this illness, but had had bad teeth a long time. Findings: Numerous infected teeth. Heart normal in size or practically so. Systolic murmur heard over whole heart area. Sounds difficult to differentiate, apparently one sound. Rate 130+, irregular. Respiration, peculiar sighing at times. Could lie flat in

bed. Liver not palpable. Ascites none, then. Swelling none. Urine negative. Blood pressure 170-80. Wassermann not done. Blood chemistry within normal limits. She was given quinidine, 5 grains every three hours, and pulse became regular in about four days and remained so while in the hospital. She left the hospital and stopped quinidine. Electrocardiographic record on May 18, 1928, showed auricular fibrillation. Pulse rate 180. She has been in the hospital on numerous occasions since, but has never been regular again. Anasarca once relieved by digitalis and quinidine. She was seen April 12, 1929. Pulse 108-144, irregular. No edema. In bed constantly.

Mr. E. M. S. Bookkeeper. White. Age 61. First seen October 15, 1923. Referred by Dr. C. A. Smith. Complaining of shortness of breath, pain in left chest, hard coughing spells, sleeplessness, swollen legs. Present symptoms began about three months before he was first seen by me. First he had shortness of breath and later the other symptoms gradually followed. Had always been quite well prior to present illness. Findings: Pyorrhea. Doubtful tonsils. Heart, systolic murmur at apex. Rate 124-148, wholly irregular. Respiration, had to sit up to breathe. Asthmatic in character. Liver palpable and tender. Ascites quite marked. Legs and scrotum and abdominal tissue swollen. Urine 2 mm. ring albumen. Blood pressure 180-108. Wassermann negative. Blood chemistry normal. This man was given large doses of digitalis and by October 25, 1923, his pulse was entirely regular and his symptoms were gone, and he was discharged November 18, 1923, free from symptoms. He was seen from time to time, about once in two years from then until on January 21, 1929, at 11:25 p. m., (five years and three months after his first visit to my office), while at his home in Acme, Wyoming; he had a pain in his left abdomen. A half hour later it went to the right abdomen and a little later the pain left the abdomen and went to his right hip. Pain continued in right hip until morning. Hip remained sore and abdomen was likewise a little sore. A local physician was called, who made a diagnosis of appendicitis. An hour later the patient was on his way to Kansas. After the first night he experienced a gripping pain quite frequently in the left chest, and he would have to sit up with it. There was no pain, however, in left shoulder. No swelling and no great shortness of breath. When I saw him, February 4, 1929, he had a blood pressure of 170-100 and a wholly irregular rate of his heart beat. Electrocardiographic record on February 5, 1929, shows auricular fibrillation with ventricular rate 92. Another record on February 18, 1929, rate 80. I have given him rest and digitalis in large doses without results. I then gave him quinidine until symptoms of overdose made us quit. Then I put him back on digitalis but still we have the auricular fibrillation. This is an example of how easy it is to cure auricular fibrillation one time and how almost impossible it is to get a regular rate at a second time.

Mrs. P. T. E. Housewife. White. First seen February 20, 1929. Referred by Dr. H. H. Bogle. Complaining of shortness of breath. This patient was referred for electrocardiographic record only.

This next case is one that might be confused with paroxysmal tachycardia. It is, however, an auricular fibrillation with coarse fibrillations.

Mr. L. Shoemaker. White. Age 56. First seen August 21, 1928. Complaining of stomach trouble and palpitation. Stomach seemed to get full of gas at times and press on his heart. This, he said, makes his heart beat faster. Last attack started on the morning of entrance, and was still on when we saw him. No nausea. The attacks date back to 1919 when he had an attack of "flu." Always quite well except acute rheumatism 1898-1900. Findings: Several snags of teeth. Submerged tonsils. Heart apparently normal in size. First sound wholly replaced by blowing systolic murmur over aortic region. Systolic murmur at mitral area. Accentuated second. Difficult to state whether first or second sound was obliterated. Hard to differentiate first and second sounds. Blowing systolic murmur heard over pulmonic and tricusped areas. Second sound quite weak. An electrocar-

diographic record on August 20, 1928, showed fast auricular fibrillation. Ventricular rate 132. Respiration not bad. Liver not palpable. Ascites none. Swelling none. Urine negative. Blood pressure 80 to 100 over 60 to 66. Every third or fourth beat could be heard at 100. Wassermann negative. Blood chemistry normal. Next day we took another electrocardiographic record that was practically normal. Rate 72 and regular.

These next two cases might be diagnosed auricular flutter. I believe, however, as does Willius, that they are cases of auricular fibrillation.

Miss M. Teacher. White. First seen August 8, 1928. Referred by Dr. Hartman. Complaining of shortness of breath and rapid pulse. Referred only for electrocardiographic record. She died, however, April 14, 1929. Findings: Heart not enlarged. No murmurs. Sounds faint. Rate 208. Respiration shallow. Liver not palpable. Ascites none. Swelling none. Albumen in urine. Blood pressure 80-70. Wassermann negative. Blood chemistry normal. The following day the rate was down to 144. By January 28, 1929, normal rhythm. He gradually improved, but his mental condition was not good.

The discovery of the genetic system, or conduction system, of the heart has given a much clearer conception of the manner of contraction of the auricle and ventricle. Yet, after all, the explanation given does not make the subject altogether understandable.

I want to show two plates from Sir James Mackenzie's "Diseases of the Heart." The plates show dissections of the right and left ventricles which visual-

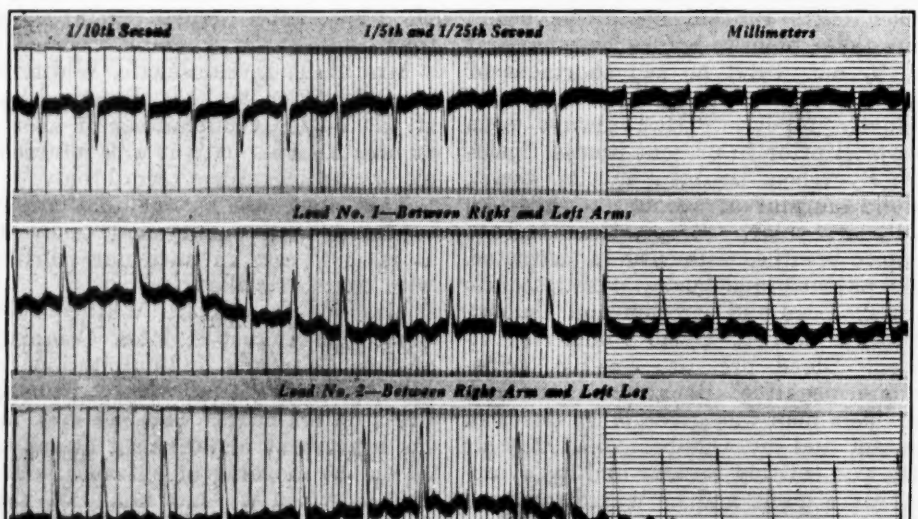

1/10th Second
1/5th and 1/25th Second
Millimeters
Lead No. 1—Between Right and Left Arms
Lead No. 2—Between Right Arm and Left Leg
Lead No. 3—Between Left Arm and Left Leg

Fig. 5. Electrocardiographic record showing a fast auricular fibrillation. Ventricular rate 166. Patient Miss M. Age 54. She died 8 months later.

Mr. S. A drayman. White. Age 69. First seen January 12, 1929. Referred by Dr. C. H. Smith. Had been operated upon for inguinal hernia two days before. "Went bad" at 4:30 a. m. Electrocardiographic record taken a few hours later showed a fast auricular fibrillation. Pulse was difficult to feel. Felt well on day before. No history of heart trouble.

ize the ventricular conduction system.

The conduction system consists of:

The sino-auricular node, which we can not show here.

The auriculo-ventricular node.

The auriculo-ventricular bundle or bundle of His.

The right and left branch of the auriculo-ventricular bundle.

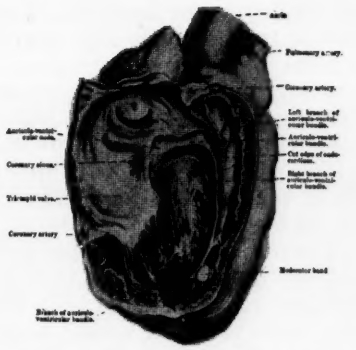


Fig. 6. Dissection from Sir James Mackenzie's "Diseases of the Heart," Page 87, showing the origin of the auriculo-ventricular bundle and the course of the right branch in the right ventricle. The anterior and lateral walls of the right ventricle have been removed as well as a portion of the tricuspid valve.

Fig. 7. Dissection from Sir James Mackenzie's "Diseases of the Heart," Page 88, showing the left branch of the auriculo-ventricular bundle. The posterior wall of the left ventricle has been split open, the incision passing up through the left auricle and aorta. The cavity of the left ventricle is exposed.

The Purkinje fibers.

Next I wish to show you some slides from a group of very interesting cases of bundle branch block. These are all complete or incomplete right branch blocks and have been observed over periods of from six to thirty-four months. I have never seen a left branch block. Willius[6] has stated that right branch block appears about 16 times as often as left branch block. The anatomical make up of the two branches is no doubt responsible for this.

Dr. John T. King[4] of Baltimore, in the June, 1928, number of the American Heart Journal, discussed very clearly the "Clinical Recognition and Physical Signs of Bundle Branch Block." In this very excellent article Dr. King brought out the fact that nine out of one hundred heart patients seen consecutively in the hospital wards and dispensary of Johns Hopkins Medical School had bundle branch block.

I will not discuss the signs as described by King, because I have been unable in the greater number of my cases to visualize or palpate the "bifid apex thrust" that he describes. I was also unable in most of them to distinguish the "feeble heart sound, with a sound and an asynchronous murmur accompanying the two elements of the systolic thrust." In the future, however, I will be more painstaking and will endeavor to find these valuable signs that have been studied and so ably described by King.

Most clinicians are of the opinion that bundle branch block can usually be diagnosed only by the aid of the electrocardiogram. I am quite sure that I, myself, can only guess at the diagnosis without the electrocardiographic record.

Bundle branch block is characterized by a Q-R-S interval which is at least 0.1 second in width. By a T wave which is deflected opposite to the main or R-S deflection in all leads and by evidence of either right or left ventricular preponderance. That ventricle preponderates through which the impulse to contraction follows normal paths, hence left ventricular preponderance is found in right bundle branch block and vice versa.

One is impressed with the fact, however, after seeing the electrocardiographic records on these patients, that former patients, seen prior to his use of the instrument, were perhaps cases of bundle branch block. I have in mind a great many patients with heart failure that I had observed over a period of months that had very little to be found in the examination of the heart except the bifid apex thrust and a somewhat enlarged left ventricle.

The first patient: Mrs. F. W. W. Housewife. White. Age 62. First seen July 18, 1927. Complaining of weakness, poor appetite, nervousness. Some short-

ness of breath on exertion. Nycturia two or three. Sugar was found in urine, 1919, and has been present since. She was under my care for diabetes when in January, 1928, she had an attack of pain in left chest, radiating to left shoulder and arm. Has been weak and short of breath since then and needs several pillows at night. Has had rheumatism more or less all of her life. Diabetes for eight years. Findings: Teeth all out. Tonsils not good. Heart apparently normal in size. No murmurs. No accentuated sounds. Rate 100. Respiration somewhat difficult. Unable to palpate liver, although abdomen tense. No ascites made out. No swelling. Urine, sugar 8 per cent, albumen 3+. Casts, hyaline and granular. Blood pressure 160-98. Wassermann negative. Blood chemistry, B. S. 363 mg. N. P. N. 42 mg. CO_2 57.34 vol. per cent. Patient has difficulty in sleeping and is extremely short of breath. Electrocardiographic record made July 17, 1928, shows very definite complete right bundle branch block.

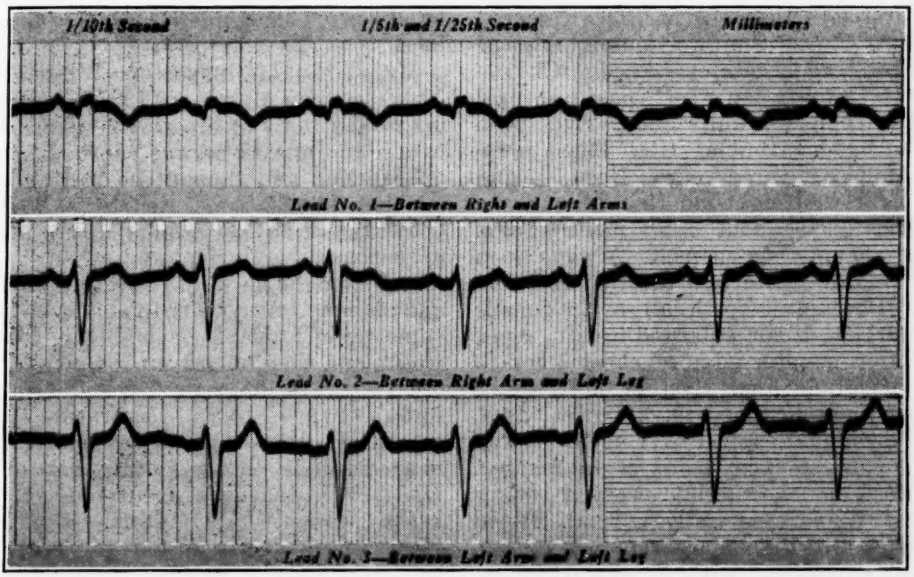
Mr. J. H. E. Salvation Army. White. Age 56. First seen May 10, 1928. Referred by Dr. C. H. Smith. Complaining of shortness of breath and weakness. Unable to lie down to sleep. Had felt badly since February when he was diagnosed "flu" but had gone about his work until the last few days when he could not lie down to sleep. Getting gradually worse and very uncomfortable. Thought he had asthma. Had been quite well until recently. Findings: Teeth not good. Heart enlarged to left outside of nipple line. Impulse felt in seventh interspace. Systolic murmur at apex. Gallop rhythm. Perhaps the bifid sound of King. Rate 120. Respiration quite labored. Not so bad when sitting. Liver palpable two cm. below costal margin. Ascites none. No swelling. Urine negative. Blood pressure 100-60. Wassermann negative. Blood chemistry not remarkable. Have not heard from him since he went to Wichita. Electrocardiographic record made May 10, 1928, shows a complete right bundle branch block.

Mrs. J. J. W. Housewife. White. Age 68. First seen July 25, 1928. Complaining of smothering sensation, sleeplessness, nycturia one to four. Two nights before entrance, while at a touring camp 100 miles west of here, she had an attack of severe smothering. A sensation of squeezing together of the walls of her chest. Her husband had to stand and hold her up all night. No help was available so that was the only way she could live. Had had some fluttering of her heart before this. Also some pain in left chest at times. Swelling of legs. Findings: Heart enlarged to left. Extra systoles. Sounds rather weak. Reduplicated first at mitral area. Rate 88. Respiration little labored. Liver not palpable. Ascites, none. Legs swollen from knees down. Only a few casts in urine. Blood pressure 190-110. Wassermann negative. Blood chemistry within normal limits. Rests better but does no exercising. Has had no more attacks.(Blood pressure 150-100.) Electrocardiographic record made July 28, 1928, shows auricular fibrillation, complete right bundle branch block and extrasystoles. A record made April 20, 1929, shows the same thing.

Mr. S. M. R. Farmer. White. Age 74. First seen August 16, 1928. Referred by Dr. C. H. Smith. Complaining of shortness of breath, weakness. Had to sit up at night to get his breath. Nycturia, several. About four weeks previous when he was plowing he first began to complain of weakness and shortness of breath. Had steadily become worse. Uses several pillows to sleep on. Heart began to bother him three years ago after a building fell down on him. Rheumatism some years ago. Findings: Teeth snags, and tonsils bad. Heart enlarged to the left. Murmurs, none. Second sound faint at mitral area. Rate 84. Respiration difficult. Liver palpable 4 cm. below costal margin. Ascites, little if any. Legs pitted some. Urine had trace of albumen. Blood pressure 190-130. Wassermann negative. Blood chemistry within normal limits. The prognosis was not flattering and the patient was not advised to take much treatment. The electrocardiographic record made August 16, 1928, shows complete right bundle branch block. He died December 16, 1928.

Mr. R. S. M. Traveling salesman. White. Age 59. First seen June 27,

1926. Complaining of pain in left chest. Came on just as he reached home from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Lead No. 2—Between Right Arm and Left Leg
Lead No. 3—Between Left Arm and Left Leg

Fig. 8. Electrocardiographic record showing complete right bundle branch block. Rate 68. The patient Mr. R. S. M., 51 years of age, had attack of heart pain (perhaps coronary disease) 16 months previous to this record. Patient is still able to drive his car although he does not work.

an auto trip in which he had to change a tire. Pain was severe. Caused shortness of breath. Some relief by hypo and quite complete with amyl nitrite. Following this attack on July 20 he had a phlebitis. Was in bed with this a long time but finally had quite complete recovery. Went back to work but had numerous attacks of pain in chest that would almost make him fall. He was advised to get out of the work for fear he would kill himself with his car in an attack. Has very light attacks now, but he carries amyl nitrite and nitro glycerine tablets with him and gets instant relief from them. Had always been well prior to June 27, 1926. Findings: Teeth all out. Submerged tonsils. Heart normal in size. Murmurs, none. Sounds, normal. Rate 92. Respiration fairly normal after attack was over. Liver not palpable. Ascites, none. No swelling. Urine negative. Blood pressure 80-60. Wassermann negative. Blood chemistry within normal limits. Feels quite well at present. Electrocardiographic record made October 22, 1927, shows complete right bundle branch block. Electrocardiographic record made April 27, 1928, is very similar.

Mrs. M. E. Housewife. White. Age 55. First seen September 24, 1927. Referred by Dr. C. H. Smith. Complaining of shortness of breath either on exertion or when quiet. Took sick with "flu" several weeks before entrance, followed by bronchitis which persisted. Felt better after she took laxatives. Shortness of breath and asthmatic symptoms had been present for past several days with quite rapid progress. Had always been quite strong prior to this illness although not especially large of stature. Findings: Bronchitis. Heart not enlarged at that time. No murmurs. Accentuated aortic second. Rate 102. Respiration difficult. Mass palpable in liver region which feels quite movable but is perhaps liver. Ascites, none. Swelling, none. Urine normal. Blood pressure 120-90. Wassermann negative. Blood chemistry, N. P. N. 40 mg. CO_2 31.1 vol. per cent. She died, April 23, 1928, after being in bed quite constantly most of the time after leaving the hospital. Electrocardiographic record taken December 2, 1927, shows absent T in all leads. Marked tachycardia. The

one made February 17, 1928, shows complete right bundle branch block.

Mr. J. S. R. Mail carrier. White. Age 62. First seen December 5, 1927. Referred by Dr. C. A. Smith. Complaining of shortness of breath, weakness. Cheyne Stokes respiration for past several weeks. Digestion quite good. Eyes been causing some trouble. High blood pressure for past three years. Been up and down for past eight months, although he worked until about four months ago. Some rheumatism in past. Always been overweight. Quite well until three years ago. Findings: Teeth all out. Tonsils submerged. Heart enlarged to left. Apex beat felt at outer edge of chest 2 cm. to left of nipple line. Systolic murmur at apex. Reduplicated first at mitral area. Extrasystole. Respiration, Cheyne Stokes. Liver palpable 3 cm. below costal margin. Ascites, none. Slight swelling below knees. Urine essentially normal. Blood pressure 210-134. Wassermann negative. Blood chemistry within normal limits. Died at his home January 12, 1928. His record is not a perfect bundle branch record, since the Q R S deflection is upright and usually it is inverted. I think, however, it is a right bundle branch block with perhaps more involvement of the coronaries than is usual. It should then be termed incomplete bundle branch block.

Mr. J. H. Gas inspector. White. Age 59. First seen March 25, 1927. Complaining of shortness of breath when he stoops over. On June 15 he was short of breath on exertion and thought he had asthma. At this time he consented to go to bed. On July 4th he had a most severe attack of coronary occlusion and when I saw him I thought he would surely die. Pale and clammy. Amyl nitrite and hypo gave some relief. Kept in bed for several weeks and then he got up for awhile and tried to work, but again went down. He had Cheyne Stokes respiration when asleep. Had to sit up to rest and finally needed full H.M.C. to get any rest at all. Had severe tonsilitis about four months before his first symptom. Findings: Heart markedly enlarged to right and left. (Ox heart.) Systolic murmur heard over whole pericardium. Second aortic sound accentuated. Rate 84. Respiration, Cheyne Stokes when asleep. Liver palpable 6 cm. below costal margin. Ascites

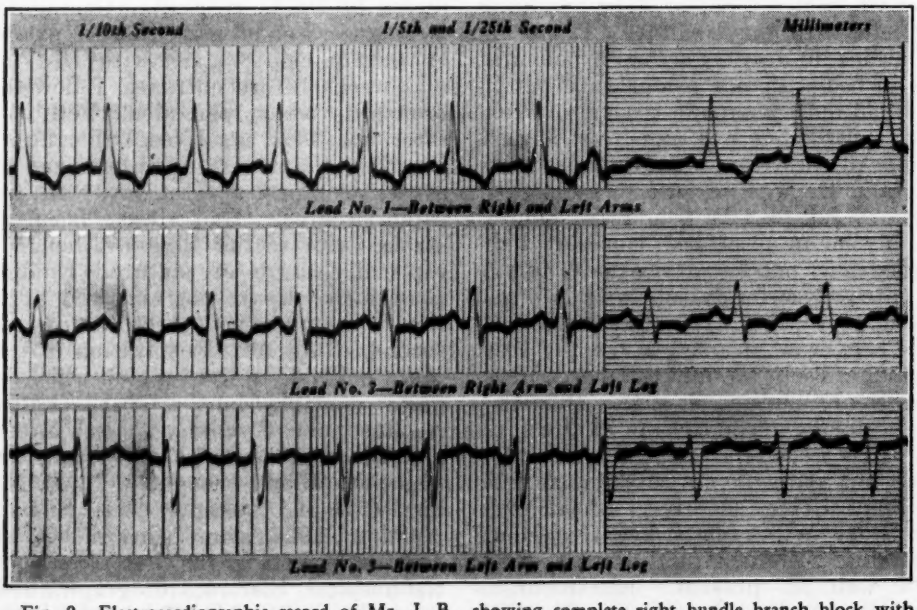
1/10th Second
1/5th and 1/25th Second
Millimeters
Lead No. 1—Between Right and Left Arms
Lead No. 2—Between Right Arm and Left Leg
Lead No. 3—Between Left Arm and Left Leg

Fig. 9. Electrocardiographic record of Mr. J. B., showing complete right bundle branch block with coronary occlusion. Rate 100. Patient was 53 years old. Attack of heart pain (coronary occlusion) 4 months prior to this record. He died 3 months later.

at the end. Swelling marked, late. Urine had albumen and casts. Blood pressure 80-60. Wassermann negative. Blood chemistry normal. Died February 6, 1928. This chest plate was made when he was first seen and shows marked hypertrophy. The electrocardiographic record made November 10, 1927, shows complete right bundle branch block.

Mr. H. B. L. A painter. White. Age 54. First seen January 19, 1929. Complaining of pain in epigastrium, which began two days before coming into hospital. Had been diagnosed indigestion with possible gall stones at time of attack. Rapid pulse and weakness followed. He has always worked as a painter at fairly hard work, but has been fairly well all his life, although never very robust. Had had pyorrhea and infected teeth until a few years ago when the teeth were all removed. Findings: Teeth all out. Tonsils submerged. Heart enlarged some to the left. No murmurs. Accentuated mitral second. Rate 210. Respiration labored. Some tenderness in liver region. Liver not palpable. Ascites none. Swelling none. Urine normal except occasional hyaline cast. Blood pressure 90-76. Wassermann negative. Blood chemistry, N.P.N. 30 mg. His pulse settled down and he felt quite well when he left the hospital. Tried to do some painting about the house, which made him short of breath. He became unable to lie down, had to sit up to sleep. The record made January 21, 1929, is a very fast auricular fibrillation. This one on January 28, shows an incomplete right branch block. This one made on February 22 shows the right bundle branch block still incomplete with Q-R-S in lead I only .07 second in length.

Mr. W. G. K. Steam shovel runner. White. Age 50. First seen February 13, 1928. Complaining of rapid pulse and shortness of breath on least exertion. In bed for eight weeks. Used three pillows to sleep. Gas on stomach. First heart attack two years previous and another one a year later. First one lasted six weeks. Second one two weeks. He felt quite well after these attacks. Had had the above symptoms for the past eight weeks. They came on quite gradually and finally made him go to bed. Had tonsilitis four years ago, no rheumatism, however. Findings: Several dead teeth. Heart enlarged to left. Systolic and diastolic murmurs at apex. First sound accentuated at apex. Rate 96. Wholly irregular. Auricular fibrillation. Mitral stenosis. Respiration fairly good while sitting in a chair. Liver palpable 2 cm. below costal margin. Ascites, none. Swelling, none. Urine normal. Blood pressure 100-80. Wassermann negative. Blood chemistry normal. Feels well but have advised him to do only very light work. No exercising work at all. The electrocardiographic record made February 14, 1928, shows auricular fibrillation. One made February 22 shows the auricular fibrillation cleared up with an incomplete bundle branch block. One on March 5, 1928, shows complete right bundle branch block. One on June 6, shows auricular fibrillation again which followed a day at work against our advice. One on June 13, shows normal rhythm established. This one made on April 19, 1929, shows auricular fibrillation in lead I. Auricular flutter with 2:1, 3:1, 4:1, 5:1 block in leads II and III. It became regular soon after this was made.

Mr. F. B. Garage mechanic. White. Age 66. First seen March 28, 1929. Referred by Dr. Devilbis. Complaining of shortness of breath, weakness. Felt fairly well until about three weeks before entrance when above symptoms gradually kept him from work. Had similar attack two years ago but seemed to get well from it. Was diagnosed diabetes. Findings: Very bad teeth and gums. Heart enlarged to left. No murmurs. Accentuated second at tricuspid area. Rate 70-92. Cheyne Stokes respiration. Liver enlarged 12 cm. below costal margin. Ascites, none or very little. No swelling. Albumen 34. Hyaline casts +. Blood pressure 200-140. Wassermann negative. Blood chemistry: Urea N. 50 mg. This electrocardiogram was made March 29, 1929, and shows a complete right bundle branch block. He died April 1, 1929.

I believe I can better demonstrate partial heart block and complete heart block, or Adams Stokes' disease by the use of

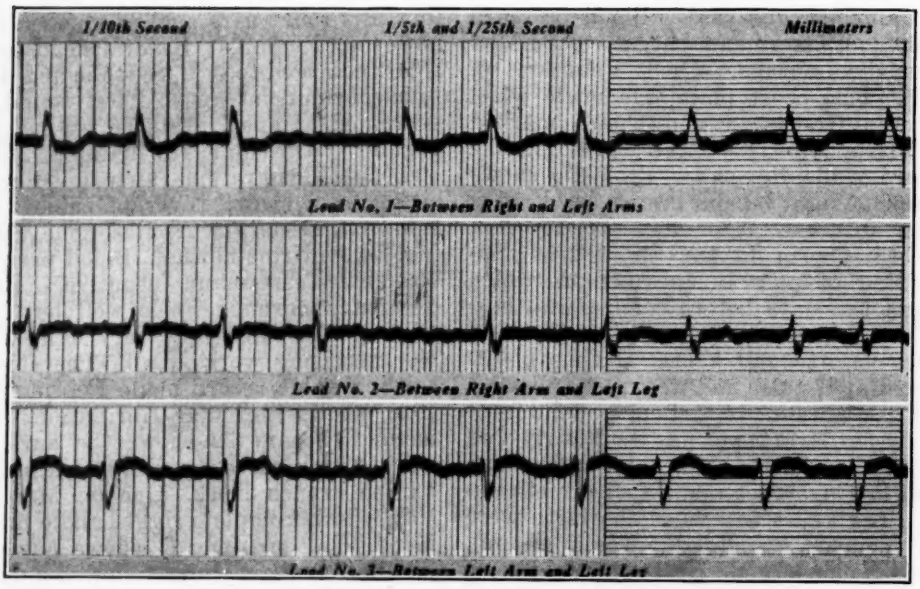
1/10th Second
1/5th and 1/25th Second
Millimeters
Lead No. 1—Between Right and Left Arms
Lead No. 2—Between Right Arm and Left Leg
Lead No. 3—Between Left Arm and Left Leg

Fig. 10. Electrocardiographic record of Mr. W.G.K., showing coarse auricular fibrillation, left ventricular preponderance, inverted T in lead I. Aberrant Q-R-S in all leads. Q-R-S .1 second. (Right bundle branch block.) Patient 50 years old. Rate 80. Feb. 14, 1928.

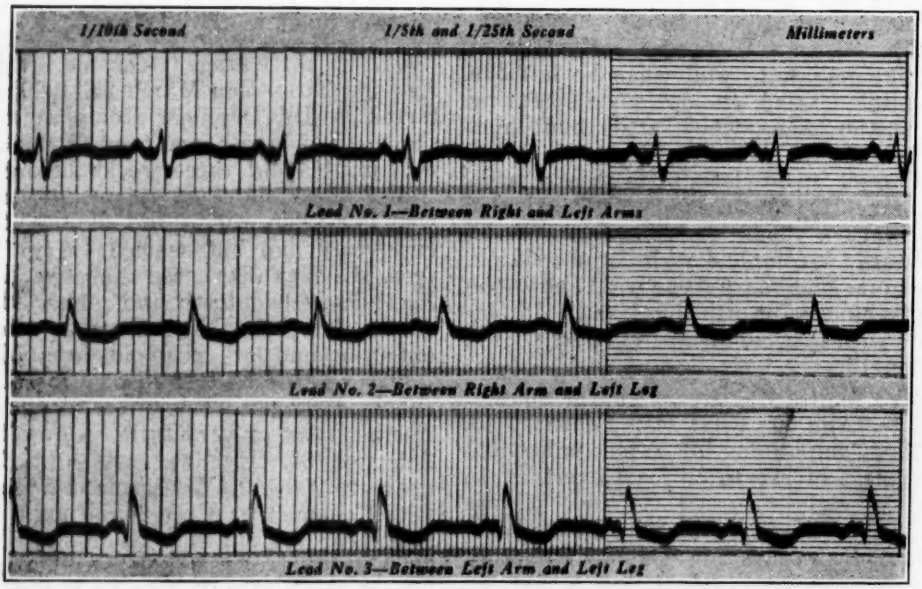
1/10th Second
1/5th and 1/25th Second
Millimeters
Lead No. 1—Between Right and Left Arms
Lead No. 2—Between Right Arm and Left Leg
Lead No. 3—Between Left Arm and Left Leg

Fig. 11. Electrocardiographic record of Mr. W. G. K. made 8 days after previous record which normal rhythm after use of quinidine sulphate. The Rs and Ts are deflected in opposite directions to what they were in Fig. 10. Rate 72. Feb. 22, 1928.

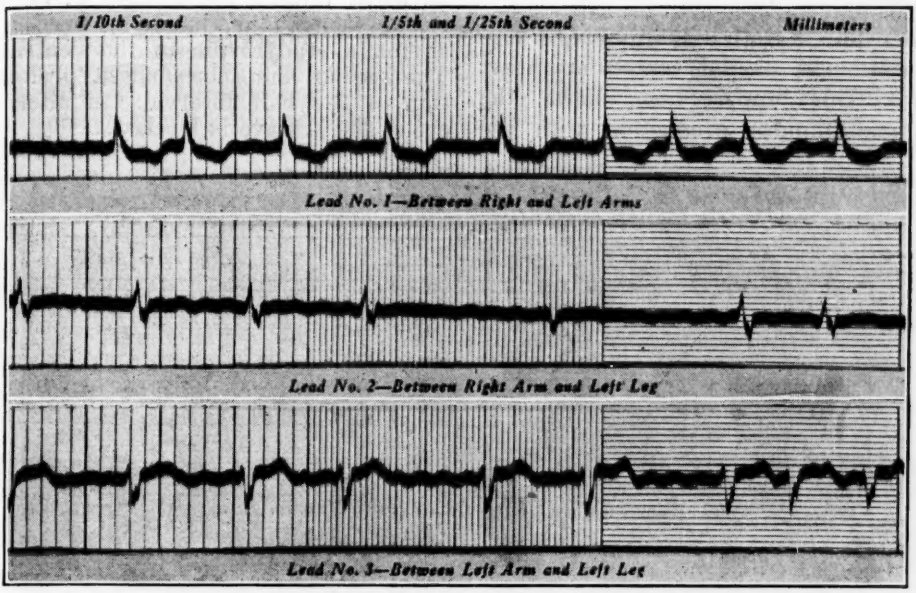
1/10th Second
1/5th and 1/25th Second
Millimeters
Lead No. 1—Between Right and Left Arms
Lead No. 2—Between Right Arm and Left Leg
Lead No. 3—Between Left Arm and Left Leg

Fig. 12. Electrocardiographic record of Mr. W. G. K. made 3 months after Fig. 11 on the day after he tried to go back to work against our advice. Record shows coarse auricular fibrillation with right bundle branch block. Patient age 50 years. Rate 60 to 84. June 6, 1928.

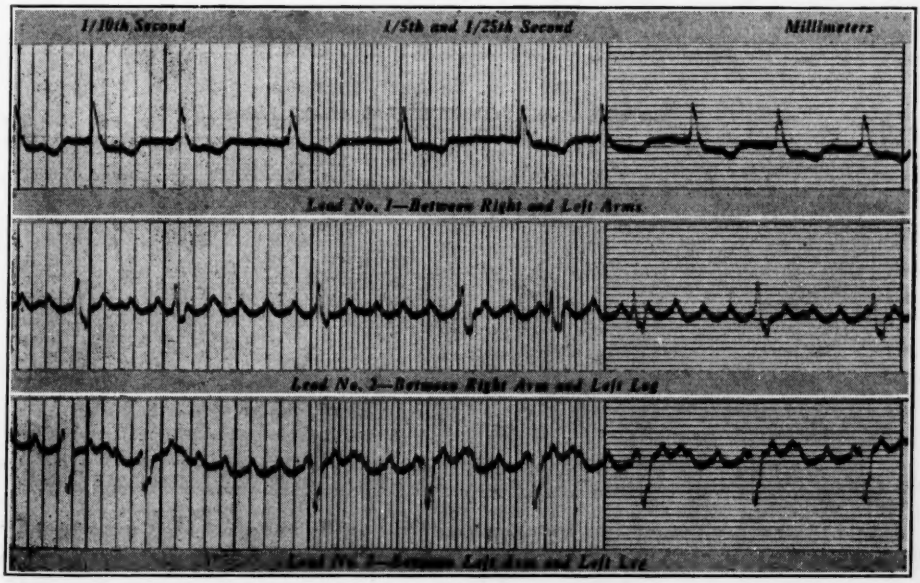
1/10th Second
1/5th and 1/25th Second
Millimeters
Lead No. 1—Between Right and Left Arms
Lead No. 2—Between Right Arm and Left Leg

Fig. 13. Electrocardiographic record of Mr. W. G. K. made 10 months after Fig. 12, shows auricular fibrillation with ventricular rate of 92 in lead I and auricular flutter with 2:1; 3:1; 4:1 and 5-1 block in leads II and III which were taken immediately after lead I. Vent. rate 92. Auricular rate 320.

two of Roth's drawings than I can by any of my own tracings.

This slide is Roth's diagrammatic representation of partial ventricular heart block. This upper line shows the rhythmic impulse production with the rhythmical auricular response. Alternate auricular stimuli are blocked at the auriculo ventricular junction, making a rhythmic bradycardia of the ventricles. The second line shows slight prolongation of the P-R interval. In alternate cycles the P wave is blocked.

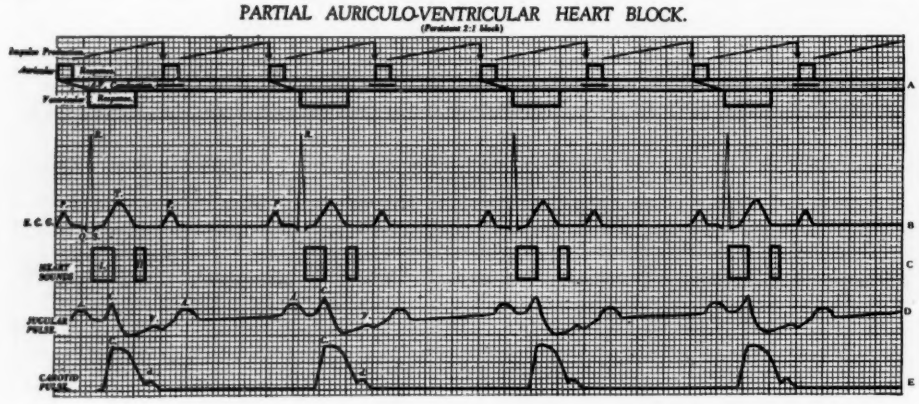

Fig. 14. Diagramatic representation from Page 91 of Dr. Irving R. Roth's book on "Cardiac Arrhythmias" of a Partial Auriculo-Ventricular Heart Block. Explanation by Roth.
(A) Mechanism. Rhythmic impulse production: rhythmic auricular responses. Alternate auricular stimuli are blocked at the A-V junction causing a rhythmic bradycardia of the ventricles.
(B) E. C. G.: Slight prolongation of P-R interval: in alternate cycles the P waves are blocked as in P_2, P_4, P_6 and P_8.
(C) Heart Sounds. (D) Jugular Pulse. (E) Carotid Pulse.

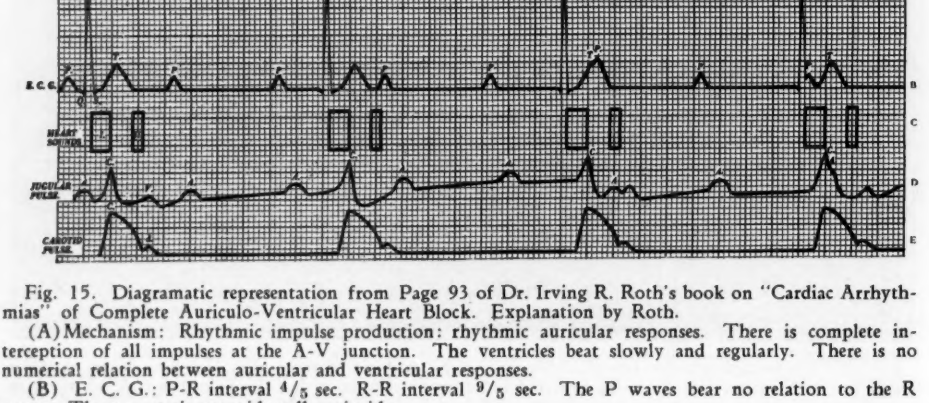

Fig. 15. Diagramatic representation from Page 93 of Dr. Irving R. Roth's book on "Cardiac Arrhythmias" of Complete Auriculo-Ventricular Heart Block. Explanation by Roth.
(A) Mechanism: Rhythmic impulse production: rhythmic auricular responses. There is complete interception of all impulses at the A-V junction. The ventricles beat slowly and regularly. There is no numerical relation between auricular and ventricular responses.
(B) E. C. G.: P-R interval $^4/_5$ sec. R-R interval $^9/_5$ sec. The P waves bear no relation to the R waves. The two at times accidentally coincide.
(C) Heart Sounds. (D) Jugular Pulse. (E) Carotid Pulse.

This slide is Roth's diagrammatic representation of complete auriculo ventricular heart block.

This upper line shows the rhythmic impulse production, the rhythmic auricular responses. There is, however, complete interception of all impulses at the auriculo ventricular junction. The ventricles beat slowly and regularly, but with no numerical relation to the auricular beats. The same thing is shown in the second line. At times the two occur at the same time.

The next and last condition that I wish to discuss is disease of the coronary arteries. This disease has recently taken quite a prominent place in clinical medicine. I will not attempt to review the literature on this subject, because it is too voluminous. For the same reason I will not discuss the subject at very great length.

Whether it is the stress of the times or whether it is the recent addition of years to man's span of life that has made the disease more frequently seen can only be guessed at. Be the cause what it may, we are seeing a great many cases that are, at least clinically, cases of coronary disease. It has been shown pathologically that the coronary arteries may be diseased while all other parts of the vascular system are unaffected.

Riesman[5] classifies coronary disease from the anatomical point of view as follows:

a. Sclerosis-coronary endarteritis,

b. Thrombosis with or without complete occlusion,

c. Embolism.

The clinical symptoms may be produced in one of three ways:

1. Sudden blocking of flow by embolism or thrombosis,
2. Narrowing of lumen by endarteritis.
3. By spasmodic closure.

Some of the causes of coronary disease are:

1. Syphilis,
2. Focal infection,
3. Over-eating, or obesity,
4. Mental strain,
5. Physical strain,
6. Heredity.

Symptoms:

1. First the patient is usually a male over 45 years of age,
2. Patient is seized with an unendurable pain in his chest, precordial usually, but might be any place in the chest,
3. The patient has a fear of impending death,
4. Ashen hue to the face and usually a cold sweat,
5. Pain in left shoulder down left arm that is most severe. May be in both shoulders and arms,
6. Usually produced by exertion,
7. Usually relieved by rest,
8. May need nitro-glycerine, amyl nitrite or morphine in large doses to relieve the pain,
9. May be other symptoms, but these are the usual ones.

The treatment:

1. Use of drugs mentioned before for immediate relief,
2. Rest in bed for several weeks following attack. Restricted activities for the rest of his life,
3. Such drugs as euphyllin to increase the blood supply of the heart are being used now with a fair degree of success.
4. Care of gastro-intestinal tract and regulation of the diet.
5. I will say nothing of the surgical treatment.

The electrocardiographic characteristics are:

1st. Inverted T in lead I,
2nd. Inverted T in lead II,
3rd. Inverted T in leads I and II,
4th. Inverted T in leads II and III,
5th. Inverted T in leads I, II and III.

The T wave is affected by digitalis, quinidine and morphine and perhaps other drugs.

I will present a few cases and show the electrocardiographic records of them. I have a few cases that demonstrate the fact that the time to make records is not at the time of he angina attack, but from five to ten days after the attack.

G. H. R. Farmer. White. Age 68. First seen January 22, 1925. Complaining of stomach pain, rheumatism, pain in chest and pain in head, drowsiness. In July, 1923, had had a sharp pain in stomach which was diagnosed gastritis. Had hypo for relief, but pain lasted

about six hours. Felt weak the next day, but was up and about. Had had a lot of dizzy spells. Symptoms had been dizziness, pain in head and indigestion more or less since then. In December, 1926, he was complaining of pain in left chest and difficult breathing when he would lie down. Sat up to get relief. Since then he has been getting gradually worse and has quite acute substernal pains at times. Findings: No infections found. Heart enlarged some to left. No murmurs. Accentuated first sound at apex. Rate 72. Respiration, sits up to breathe. Liver not palpable. Ascites, none. Swelling, some of late. Urine fairly normal. Blood pressure 220-140. Wassermann negative. Blood chemistry that of essential hypertension. Electrocardiographic record made on March 26, 1928, shows inverted T in lead I. He died March 14, 1929, with a diagnosis of heart disease.

H. H. A. Painter. White. Age 58. First seen May 4, 1928. Complaining of weakness, sleeplessness, shortness of breath. Nycturia, six to eight. November 19, 1927, had a cold. Been going down since that time and getting more and more helpless. Always been well prior to last illness. No rheumatism. G. C. at 18. Findings: Teeth bad. Tonsils bad. Heart enlarged to left. No murmurs. Sounds normal. Rate 68. Respiration labored. Liver enlarged. Ascites, none. Swelling, none. Urine essentially normal. Blood pressure 200-100. Wassermann negative. Blood chemistry normal. *x*-Ray of heart made June 7, 1928, is comparatively normal. Electrocardiographic record made May 4, 1928, shows inverted T in leads II and III. S-T interval .4 second. Another record made July 31, 1928, about the same as before. He died March 8, 1929.

C. H. W. Laborer. Colored. Age 40. First seen September 15, 1927. Complaining of sores on face and legs that would not heal. Gave him several doses of neosalvarsan, mercury, bismuth, etc., and he cleared up quite nicely. He thought he was well and worked one day and had a severe pain in his heart that he said he thought would kill him. After this he was unable to lie down to sleep. He came in February 6, 1928. He had shortness of breath. Had had syphilitic infection 18 years previous. Unable to work for two years more. Findings: Wassermann 4+. Heart enlarged to right and left. Systolic murmur over pulmonic and aortic areas. First and second mitral sounds seem to be a lub-lub-lub, etc. More of a patter. Rate 72. Respiration, sat up all the time. Cheyne Stokes for weeks before death. Liver palpable 3 cm. below costal margin. Ascites, terminal quite marked. Legs edematous for weeks. Urine negative. Blood pressure 160-100. Blood chemistry normal. February 27, 1928, 2 meter *x*-ray of heart shows a marked enlargement of left ventricle. An electrocardiographic record made February 6, 1928, shows inverted T in lead I. One taken February 27 shows inverted T in leads I and II. He died July 26, 1928.

Mr. F. T. Miner. White. Age 39. First seen February 13, 1928. Complaining of his heart, twitching pains in his heart, weakness, shortness of breath. First had pain in his chest five or six years ago. Has worked right along until recently when he gets so short of breath he can not work. Legs also get tired. No swelling of legs. Been diagnosed leakage of heart. Rheumatism 10 years ago. In bed at that time. Tonsils out June, 1927. Findings: Right pupil smaller than left. Irregular right pupil. One doubtful tooth. Gums in good shape. Heart enlarged to left. Thrill at apex. Marked pulsation in neck. Body seems to move with heart beat. Reduplicated first sound over mitral and aortic areas. Systolic and diastolic murmurs at apex and at pulmonary region. Rate 60. Respiration somewhat labored. Liver palpable 2 cm. below costal margin. Ascites, none. Some edema of legs. Urine negative. Blood pressure 120-40. Wassermann 4+. Blood chemistry within normal limits. On antiluetic treatment. Has gained some in strength, etc. Electrocardiographic record made February 13, 1928, shows inverted T in leads II and III. One made May 2, 1928, shows the same thing.

Mr. W. J. S. Merchant. White. Age 50. First seen February 8, 1928, in a typical attack of angina pectoris. Complaining of indigestion. Pain was sub-

sternal and radiated to left shoulder and down his left arm. Wanted his left arm above the elbow rubbed constantly. Attack began about 10:00 a. m., but he ate a light lunch and about 1:00 p. m. was taken home with most severe pain. He was pale and clammy when I reached him. Rest, morphine and amyl nitrite gave relief of substernal pain, but arm ached all afternoon. Was in bed for several days but has gradually gotten back to where he does quite a day's work at the office. Some indigestion after meals at times, but not severe. Findings: One dead tooth. Tonsils not good. Heart enlarged little to left but not much. No murmurs. No accentuated sounds. Rate 64. Respiration painful when first seen. Liver not palpable. Ascites, none. Swelling, none. Urine, occasional cast. Blood pressure 100-80. Wassermann negative. Blood chemistry within normal limits. Feels fine at present. This tracing was made 10 days after his attack of angina pectoris. We have a T that is shallow and I believe one can make a positive diagnosis from this record. The next record, made 32 days after the attack, shows the inverted T so much deeper that it is quite safe to surmise that had a record been made on the day of attack the T would have been upright in lead II.

Mrs. F. B. W. Teacher. Colored. Age 43. First seen January 16, 1928. Complaining of shortness of breath, weakness. Unable to sleep except by sitting up. Has been teaching school and working quite hard after school. Been unable to get rest at night and gradually got to where she can hardly go. Quite well until past few weeks. Findings: Teeth and tonsils not remarkable. Heart enlarged to left. Systolic murmur at apex. Accentuated aortic second sound. Rate 120. Respiration labored. Unable to lie down. Liver palpable 1 cm. below costal margin. Ascites, none. Swelling, none. Urine normal. Blood pressure 220-140. Wassermann negative. Blood chemistry normal. The electrocardiograph record made January 19, 1928, shows inverted T in leads I and II and tachycardia. She died April 16, 1928, after being in bed several weeks.

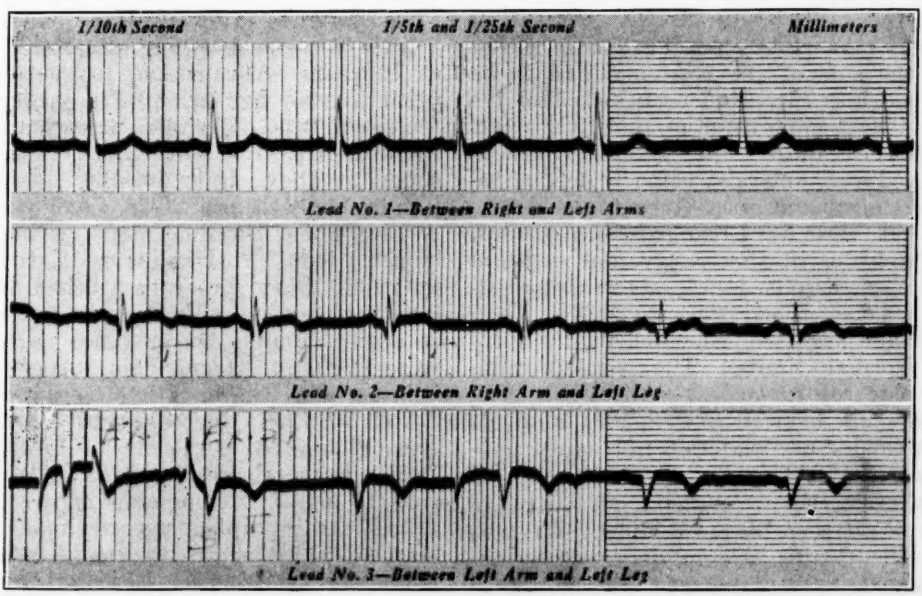
1/10th Second
1/5th and 1/25th Second
Millimeters
Lead No. 1—Between Right and Left Arms
Lead No. 2—Between Right Arm and Left Leg
Lead No. 3—Between Left Arm and Left Leg

Fig. 16. Electrocardiographic record of Mr. W. J. S., showing a shallow T in lead II and a deep T in lead III. Also a left ventricular preponderance. Record of a man, 50 years old, made 10 days after an attack of heart pain. (coronary disease.)

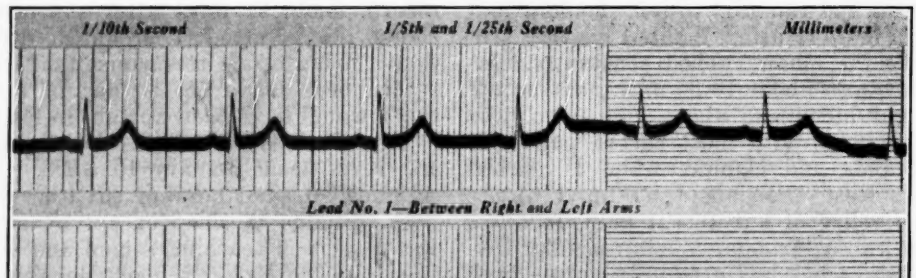
1/10th Second
1/5th and 1/25th Second
Millimeters
Lead No. 1—Between Right and Left Arms
Lead No. 2—Between Right Arm and Left Leg
Lead No. 3—Between Left Arm and Left Leg

Fig. 17. Electrocardiographic record of Mr. W. J. S., made 32 days after the attack, shows T very pronounced in all leads. Note difference in leads II in Fig. 16 and 17. In Fig. 16 it is shallow while in Fig. 17 it is deep.

Mr. W. S. Laborer. White. Age 64. First seen February 12, 1928. Complaining of shortness of breath. Sits up to rest or sleep. Has been bothered with shortness of breath for a year. Ten weeks ago while pumping a tire he fell by the side of the road and had to be helped into car. Had been kicked in the chest by a mule three or four years ago. Otherwise quite well. Findings: Teeth bad. Heart enlarged some to left. Systolic murmur at apex. Accentuated aortic second. Rate 64. Liver palpable. Ascites, very little, if any. Legs and scrotum quite edematous. Few casts in urine. Albumen 2+. Blood pressure 200-100. Wassermann negative. Blood chemistry within normal limits. The electrocardiographic record made February 13, 1928, shows an inverted T in lead I and left ventricular preponderance. He died February 15, 1928.

Miss M. L. W. Student. White. Age 17. First seen March 8, 1929. Referred by Dr. Combs. Complaining of severe headache and backache. Hemorrhage from bowel. Severe anemia. Occasional double vision. Nausea and vomiting. Took sick seven weeks ago with what seemed to be an acute nephritis. Had a severe cold in head and chest about five weeks prior to that. Always been quite well. Had gone to school. Had done quite a little horse-back riding. Scarlet fever at 10 years. Always had to get up at night to void her urine. Findings: Infected tonsils. Systolic murmur over whole heart area. Accentuated second sound at apex. Rate 106-136. Respiration labored at times. 20-28. Liver tender. Ascites, none. Swelling, none. Urine, albumen 1+ to 3+. Hyaline casts. Granular casts. Blood pressure 210-140. Wassermann negative. Blood chemistry within normal limits. On entrance red cells were 1,700,000. Hemoglobin 18 per cent. White count 28,400. Polys 94 per cent. March 8, 1929. Increased to 3,400,000. Hemoglobin 54 per cent. (March 14, 1929). Hemorrhage March 23, 1929. Red cells 1,730,000. Hemoglobin 18 per cent. Electrocardiographic record made on March 21, 1929, shows inverted T in leads I and II. Diagnosis: Essential hypertension with coronary disease.

Mr. W. J. A. Druggist. White. Age

56. First seen November 10, 1928. Referred by Dr. Fred Deal. Complaining of substernal pain. Two nights before I saw him he had a substernal pain at 1:00 a. m. which came on after two hours of sleeplessness. The pain lasted until about 3:30. The pain radiated to left shoulder and down the left arm. On the following night he had a similar disturbance. Findings: Tonsils submerged. Several infected teeth. Heart normal in size. No murmurs. Sounds normal. Rate 72. Respiration good. Liver not enlarged. Ascites, none. No swelling. Urine negative. Blood pressure 90-70. Wassermann negative. Blood chemistry normal. This record was made November 10, 1928, the morning of his attack. The only positive evidence we have is the fact that there is no zero line at the end of S but the T comes off at once above the zero line in both lead II and III. The record made six days later, however, shows a definite inverted T in both lead II and lead III. This inversion is still more marked 55 days after the attack. This merely shows that one should not take one record and pass final judgment on it. Willius[6] in his recent book of March, this year, has shown this condition quite conclusively. The patient has been on euphyllin, t.i.d., since November. Improvement is quite marked. The infected teeth were removed.

Sr. M. I. Retired nurse. White. Age 70. First seen January 8, 1929. Complaining of shortness of breath, pain in left chest, shoulder and arm. Was feeling quite well until one morning at chapel she fainted. When awake her pain and weakness was present. Always able to be about. Did not work hard. Overweight for a number of years. Findings: Infected teeth. Heart enlarged to left. No murmurs. Accentuatel second at apex. Rate 70-90. Respiration, at times she sighs. Liver not palpable. Ascites, none. No swelling. Urine negative. Blood pressure 110-80. Wassermann negative. Blood chemistry normal. Just does not get strong. Electrocardiographic record made January 9, 1929, shows inverted T in leads I and II.

Mrs. A. H. Housewife. White. Age 52. First seen May 4, 1928. Referred by Dr. C. H. Smith. Complaining of vomiting and shortness of breath. Had been diagnosed influenza a few weeks before but had no cold with it. Symptoms the same as now. No history of rheumatism. Find-

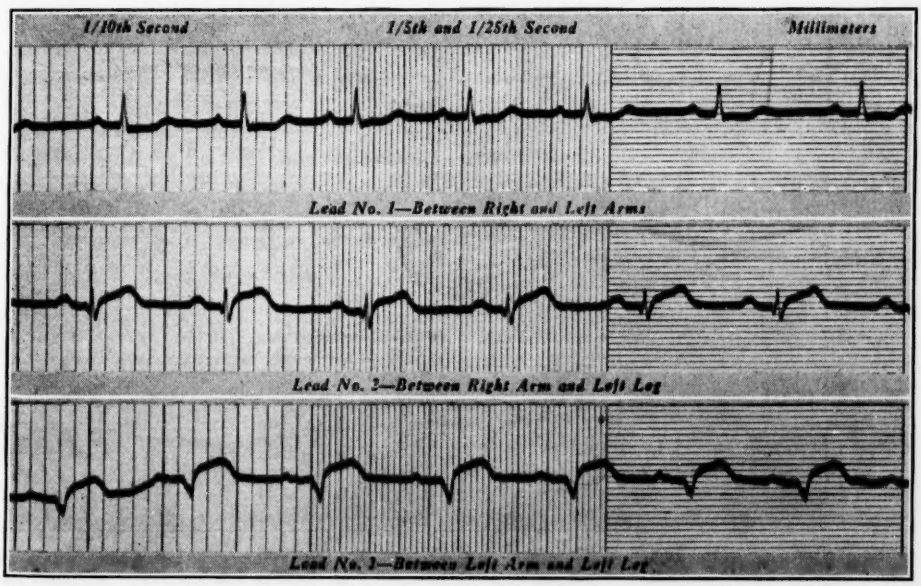
1/10th Second
1/5th and 1/25th Second
Millimeters
Lead No. 1—Between Right and Left Arms
Lead No. 2—Between Right Arm and Left Leg
Lead No. 3—Between Left Arm and Left Leg

Fig. 18. Electrocardiographic record of Mr. W. J. A., 56 years of age, made 8 hours after a severe attack of heart pain (coronary occlusion). Record shows left ventricular preponderance. S T interval .32 seconds. T comes off above zero line in leads II and III. T has high amplitude in leads II and III.

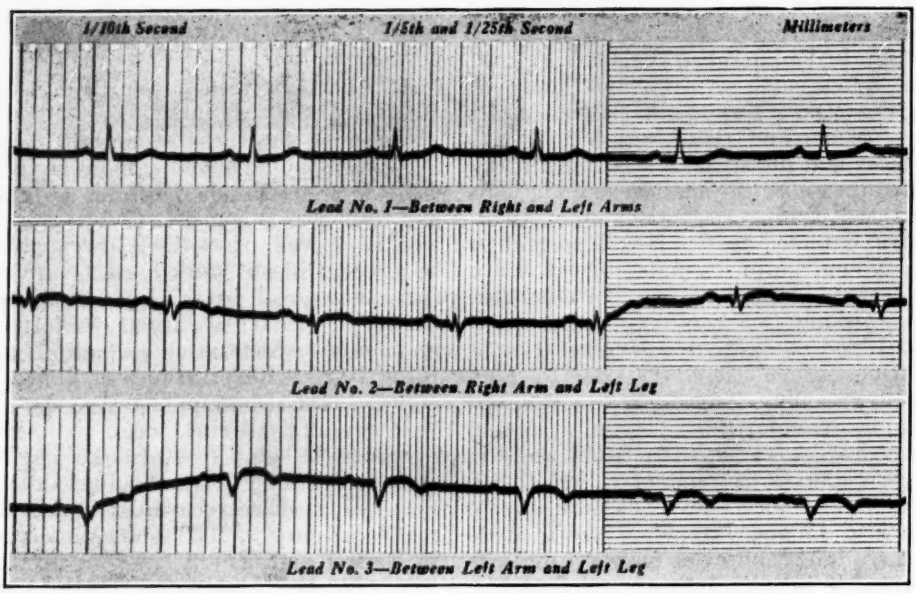
1/10th Second
1/5th and 1/25th Second
Millimeters
Lead No. 1—Between Right and Left Arms
Lead No. 2—Between Right Arm and Left Leg
Lead No. 3—Between Left Arm and Left Leg

Fig. 19. Electrocardiographic record of same patient as Fig. 18, made 6 days later, showing the T inverted in leads II and III. T rather shallow in lead II.

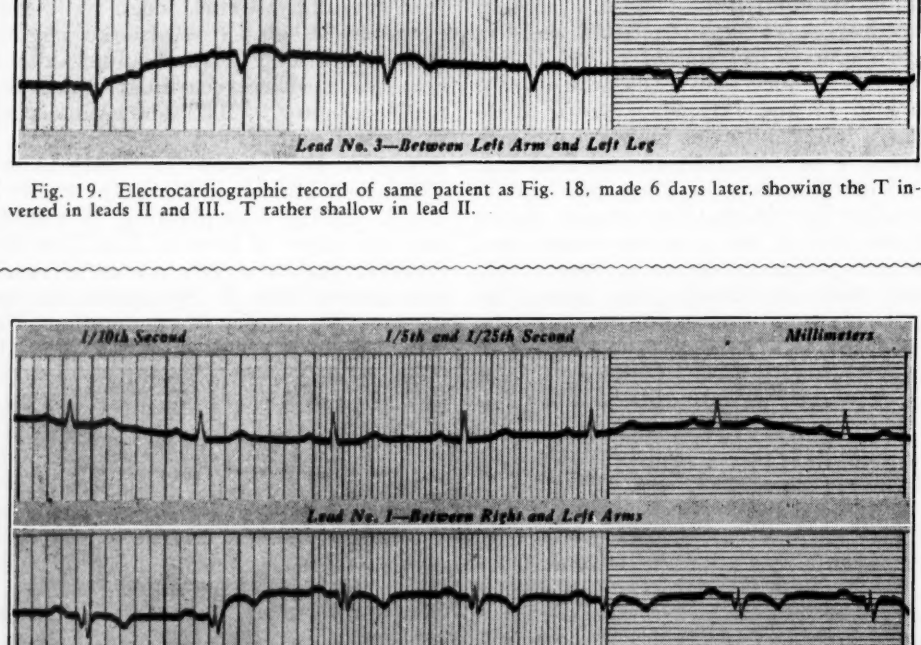
1/10th Second
1/5th and 1/25th Second
Millimeters
Lead No. 1—Between Right and Left Arms
Lead No. 2—Between Right Arm and Left Leg
Lead No. 3—Between Left Arm and Left Leg

Fig. 20. Electrocardiographic record of same patient as Fig. 18 and 19, made 55 days after attack of cardiac pain (coronary occlusion) which shows a much deeper T in both leads II and III. The rest of the record is quite similar to the first and second.

ings: Cyanosed. Teeth all out. Heart enlarged to left. Musical diastolic murmur at apex. First sound accentuated at base. Rate 100. Respiration labored. Liver palpable and tender. No ascites. No swelling. Urine negative. Blood pressure 140-0. Wassermann negative. Blood chemistry—N. P. N. 54 mg. The electrocardiographic record made May 4, 1928, shows inverted T in lead I. Iso electric T in lead II. Left ventricular preponderance.

Frank M. Student. White. Age 16. First seen November 12, 1927. Referred by Dr. C. H. Smith. Complaining of shortness of breath on exertion. Hacking cough. Was diagnosed heart trouble several months before I saw him. Had been in school up to the time he came in. No edema. Had been fairly well as a young boy. Chorea at 8 years. Findings: Tonsils out in 1925. Loud systolic murmur heard over whole heart. Rate 88. Regular. Respiration somewhat labored. Liver not tender. No ascites. No swelling. Urine negative. Blood pressure 120-30. Wassermann negative. Blood chemistry normal. 2 meter plate made June 28, 1927, shows enlarged left ventricle. Electrocardiographic record made November 16, 1927, shows an inverted T in leads II and III. The boy feels fairly well. Has been in school all year. Does not play hard, but does play more than he should. Has been on euphyllin with a lot of general improvement.

Mrs. W. Housewife. White. Age 57. First seen January 20, 1929. Referred by Dr. C. H. Benage. Complaining of sharp, shooting headaches that come on in attacks. First took sick a week before I saw her with a pain in middle of her chest that seemed to rush up to her neck and back of her head. Felt faint with attack. These attacks continued to occur at frequent intervals, but would be worse if she sat up in bed a little while and would then lie down. Quite well prior to this illness. Findings: Several infected teeth. Heart about normal in size. No murmurs. Sounds normal. Rate 80. Respiration normal. Liver not palpable. Ascites, none. No swelling. Urine negative. Blood pressure 180-80. Wassermann negative. Blood chemistry—CO_2 50.4 vol. per cent. The electrocardiographic record made January 25, 1929, shows inverted T in leads I and II. I am quite sure that these attacks are attacks of angina pectoris, yet they are not altogether typical. She was in bed until March 6, 1929. She took large doses of K. I. and has made a lot of improvement. The attacks are very light now, although she still has some.

SUMMARY

The use of the electrocardiograph should become more general. There are many diseases of the heart that can not be recognized by physical and clinical examinations alone that should be diagnosed early by the aid of the electrocardiographic record.

Three types of myocardial changes are discussed with histories and electrocardiographic records of cases presented.

CONCLUSION

1. Auricular fibrillation can be definitely diagnosed by the use of the electrocardiograph in all but a few exceptional cases that must be differentiated from auricular flutter or paroxysmal tachycardia. It is granted that many of these cases can be diagnosed without the use of the instrument.

2. Angina pectoris and coronary disease can be diagnosed in most cases by the use of the electrocardiogram.

3. Records should be made from 5 to 30 or more days after the attack of angina pectoris before a negative report is taken as conclusive proof against coronary disease or before one says the record will not show the condition. Records are shown which tend to demonstrate this conclusion.

4. Bundle branch block is a common heart disease that is not diagnosed except by the most skillful without the aid of the electrocardiographic record.

5. Bundle branch block makes up about 10 per cent of all heart diseases seen in the author's private and hospital practice.

6. The electrocardiogram gives aid in diagnosis and prognosis in certain types of myocardial disease that is most satisfying to the clinician, and his patient.

BIBLIOGRAPHY

1. "Clinical Electrocardiography,"—Willius. W. B. Saunders Company, Philadelphia.
2. "Clinical Aspects of the Electrocardiogram,"—Harold E. B. Pardee. Paul B. Hoeber, Inc. N. Y.
3. "Cardiac Arrhythmias,"—Irving R. Roth. Paul B. Hoeber, Inc., New York.
4. "The Clinical Recognition and Physical Signs of Bundle Branch Block,"—Dr. John T. King, American Heart Journal, June, 1928.
5. Diseases of the Coronary Arteries,"—Dr. David Riesman. Medical Clinics of North America, January, 1929.
6. Clinical Electrocardiograms,"—Frederick A. Willus, M.D. W. B. Saunders Company, Philadelphia.

Observations on Diverticula of the Colon

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Read before the annual meeting of the Kansas Medical Society, at Salina, Kan., May 7, 8 and 9, 1929.

In 1858, at a meeting of the Pathological Society of London, Sydney Jones reported the case of a man who had suffered from a fistulous communication between the bladder and the bowel, secondary to an inflamed and ulcerated diverticulum of the sigmoid flexure. In spite of this striking demonstration, nearly 70 years ago, of the existence of diverticula of the large bowel as distinct entities, and also of their role in the production of grave pathological processes, it was not until 1898 that Graser, by emphasizing their importance in the production of stenosing types of inflammation simulating carcinoma, caused attention to be seriously focused on them for the first time. Then the contributions of Mayo, Wilson and Giffin, Bear and Brewer in America, and of Moynihan and Telling in England, establishing diverticulitis as a well-defined clinical entity with definite sequelae. In spite of the extensive literature which has since grown up around the subject, diverticulitis cannot be said to be a common disease.

INCIDENCE AND DISTRIBUTION

The most recent radiological records of the incidence of diverticula are those by Spriggs and Larimore. In a series of 1,000 radiological examinations of the colon Spriggs found diverticula in 10 per cent. Larimore found diverticula in 1.24 per cent of 4,406 cases. At the Mayo Clinic, in 1925, diverticula were found in 5 per cent of cases in a series of 4,484 radiological examinations of the colon. In a recent reported study of 498 necropsies, diverticula were found in 34 cases (about 7 per cent). All but two of the patients in this series were over 45 years of age. Making the necessary corrections, one could say that roughly 13 per cent, or one person in eight over the age of 45, showed diverticular formation in the large bowel. It was found almost twice as often in men as in women, although there was no marked preponderance of males over females in the total series studied.

In another report of examination of pathological specimens of large bowels, 53 specimens examined, diverticula were confined to the sigmoid flexure alone in 22 cases (40 per cent). They were scattered throughout the entire colon in 16 cases (30 per cent). Rarely the cecum, ascending colon, splenic flexure, and upper rectum were each involved, alone or with the sigmoid. The point to be emphasized is that the sigmoid is involved in between 70 and 80 per cent of the total number of cases showing diverticular formation; these findings correspond closely with those determined by *x*-ray examination.

THEIR SITE IN RELATION TO CIRCUMFERENCE OF THE BOWEL

The exact situation of diverticula in relation to the circumference of the bowels is remarkably constant. They appear between the mesocolic and the antimesenteric longitudinal muscle bands, rather closer to the latter than to the former. The diverticula are definitely related to the blood-vessels entering from the mesentery. I have never seen diverticula of the large bowel entering between the two leaves of the mesentery as diverticula of the small intestine are so apt to do, and in only one instance have I seen them appearing on the antimesenteric aspect of the bowel between the two antimesenteric muscle bands. When numerous in the sigmoid, however, they may not confine themselves strictly to the vessel points, but, as a result of the generalized weakening of the musculature, they may crop out promiscuously all over the area between the mesocolic and the antimesenteric longitudinal muscle bands. I have seen one instance in which the diverticula were splitting the fibres of the longitudinal muscle band.

I believe the final tendency in all diverticula of the large bowel is towards

the production of the false type of sac. On the other hand, in a certain proportion of diverticula a muscular coat is retained, and these can be classified as true diverticula. At the same time, it is probable that they are simply stages in the development towards the false type. Again, if chronic inflammatory changes develop around diverticula, their further growth tends to be arrested.

ETIOLOGY

The first aspect of the problem to be considered is whether the diverticula are congenital or acquired, or whether there are two distinct types. The fact that several cases have been described at early ages favors a congenital basis, and there is also the association, in a proportion of cases, with diverticula elsewhere in the body. In a series of 53 cases examined post mortem, diverticula of the colon were found associated with diverticula of the duodenum in four cases, with diverticula of the jejunum in two, and with diverticula of the bladder in two. In other words, the coexistence is not common enough to favor a congenital origin. That diverticula of the colon are sometimes congenital must, I think, be admitted, but they are very rare. The cases reported by Hartwell and by Futterer and Mitteldorph are undoubtedly congenital.

Acquired Diverticula—As a rule, the occurrence of diverticula in middle and later life is overwhelming evidence that they are acquired. The age-incidence in 100 cases of diverticulitis verified by operation showed 85 per cent of the patients between the ages of 40 and 70, so that apparently diverticula begin to affect persons in middle life and are especially common in advanced middle age and old age.

The earlier observers, including Graser and Hansemann, stressed the repeated increases in pressure from constipation and gaseous distension as being important factors in etiology, but there are many reasons for believing that if the wall of the bowel is of normal elesticity there is no distension clinically which will produce diverticula. Again though, Graser, Hansemann, Hanau, and Klebs concentrated on the vessel points in the bowel wall as constituting the key to the etiology of diverticula, these vessel points are probably to be regarded more correctly as determining the site of the diverticulum than as important etiological factors in their formation. Most observers have noted the tendency for diverticula to occur in rather obese persons, but the obesity in these cases is most probably the concomitant of middle age and its attendant restricted physical activity, with resultant lowered plane of metabolism and less perfect oxygenation of the tissues. With few exceptions diverticula occur after the age of 40, when the patient is entering on the degenerative period of life. It seems logical enough to assume that the loss of tone and elasticity of muscle which accompanies advancing years is not confined to striated muscle, but affects the unstriped muscle throughout the body, including that of the intestine. Recently Spriggs and Marxer, from a series of excellent radiological studies, suggest that the diverticula may result from a preceding inflammatory process, but in my own pathological studies I was unable to demonstrate this.

CLINICAL FEATURES

Clinically, this subject should be divided into two types. First, diverticulosis, second, diverticulitis, the second merely being the first plus some complication.

Diverticulosis is often without symptoms or the symptoms are so indefinite as not to suggest the presence of multiple diverticula. However, the colon which is the seat of diverticulosis is often spastic, and there may be considerable constipation. Even then it may be difficult to determine whether the constipation is due to diverticula or the habit of the individual. Likewise, the spasticity present may be either the cause or the result of the condition. The diagnosis is usually made more or less accidentally as a result of the *x*-ray examination of the large bowel.

Diverticulitis is the clinical condition with which we are concerned today. As previously stated, it usually is diverticulosis plus some complication. This complication is most often infection or the

results of infection. This infection may be acute and bring the patient immediately to the surgeon with a condition that very much simulates appendicitis except the symptoms are all left sided rather than right sided. We had one such case in which the operation revealed an acutely inflamed diverticulum of the sigmoid. Following the removal of this, the patient made a rapid recovery. In most cases, however, the infection is of a more chronic type resulting in either of two conditions. First, pelvic peritonitis, which if not treated may result in abscess formation. The second group of the chronic type is the far more common one, and in this group there is a gradually increasing stenosis of the bowel from chronic diverticulitis and peridiverticulitis producing more or less constipation, and from time to time superadded acute inflammation may cause a flare up during which the sigmoid becomes swollen and tender and partial or complete obstruction may supervene. The patient may seek advice during the first of these attacks or may pass through several of them with periods of relief and come to the surgeon only after repeated attacks of this character.

There is a distinct tendency for the sigmoid which is the seat of diverticulitis and peridiverticulitis to become adherent to surrounding structures, and this is favored by the mobility of the sigmoid loop. The adhesions may localize the infection, thus helping to produce the abscesses referred to, or by the contraction of these adhesions, produce the obstruction referred to. In the chronic type these adhesions are practically universally present. In diverticulitis of the chronic type, there may be associated either carcinoma or tuberculosis. In 1917, Mayo reported 42 cases in 13 of which there was an associated carcinoma and he insists that chronic diverticulitis should be regarded as a pre-cancerous condition. Mailer has reported two cases in which hyperplastic tuberculosis of the sigmoid was found coexistant with diverticulitis.

DIFFERENTIAL DIAGNOSIS

The very common mistake of the patient has been to confuse chronic diverticulitis of the sigmoid with carcinoma of the sigmoid. Both conditions are prone to occur past middle life. As we have seen these cases, the two important points in differential diagnosis has been the malignant case shows early loss of weight and examination of the stool shows blood or blood and mucus. Judd and Pollock in stressing this point have stated in their series, only 15 per cent of their diverticulitis cases had blood in the stool while approximately 65 per cent of the malignant cases showed blood.

CONCLUSIONS

First: Diverticulosis is a fairly common disease present in one to eight persons past the age of 45.

Second: Diverticulitis is the clinical entity usually recognized and far too often diagnosed as carcinoma.

Third: Diverticulitis is a clinical entity, almost universally involves the sigmoid, and is characterized by recurring attacks of partial obstruction occurring in an obese person past middle life. There is this history of recurring attacks of partial obstruction without loss of weight or blood in the stool. Careful examination may or may not show a tumor in the left side of the pelvis.

To emphasize the importance of differential diagnosis, and to call attention to one post-operative complication that I have never seen mentioned, I desire to quickly review two cases that were recently in the hospital at the same time. The first is a young woman thirty-two years of age, a history of repeated attacks of partial obstruction, low in the large bowel, but with this history was the history of marked loss in weight and both blood and mucus in the stool. *x*-Ray study confirmed the suspicion of partial obstruction low in the large bowel. Bimanual examination revealed the presence of a small tumor mass in the left side of the pelvis. Operation made positive the diagnosis of malignancy low in the sigmoid. At the first operation we did a left inguinal colostomy. Two weeks later, we removed by the perineal route, the entire rectum and lower sigmoid. Pathological examination confirmed the diagnosis of malignancy, reported no evidence of peri-rectal glandular involvement. The second case is one bearing

upon the subject at hand, this lady was 47 years old, obese, with a history of repeated attacks of partial obstructions. No blood or mucus in the stool, and no loss of weight, and like the other, bimanual examination showed a small left sided pelvic tumor. *x*-Ray examination confirmed the obstruction and showed us rather conclusive evidence of the presence of diverticula. This woman was operated upon at almost the same time as the first case. There was found present the adherent loop of sigmoid with the multiple diverticula easily recognized. This was re-sected and end-to-end anastomosis done. She returned to bed in good condition, remained in good condition. On the fourth day the bowels moved for the first time. On the evening of the sixth day she was seized very suddenly with very severe pain in the lower part of the abdomen. Pain so severe as failed to be relieved by a first or second hypodermic of morphine. She showed immediately symptoms of shock, and all efforts at relief of this shock failed. She died six hours after the onset of the pain. An autopsy revealed a perfectly healed suture line, but about one-half inch proximal to the suture line on the posterior surface of the bowel an unresected diverticulum had ruptured, thus emptying into the free peritoneal cavity a quantity of intestinal content.

The point which I wish to emphasize is that in doing resection, one should always remember the multiplicity of these lesions and examine carefully for their presence near the proposed suture line. Following the completion of this suture line, I drew across it many surrounding tabs. It is possible that in doing this, and failing to recognize that in one of these apparent fat tabs, there might be hidden a diverticulum that my needle so nearly encroached upon this diverticulum as to weaken its wall and thus make possible the rupture which came on the evening of the sixth day.

———R———

A teacher was telling the class that "ous" at the end of a word usually meant "full of," as in "courageous," meaning "full of courage." "Now," said she, "can any one of you boys give me another example?"

Up shot a hand and a voice piped forth: "Please teacher, 'pious.'"

The Interpretation of the Blood Wassermann Reaction in the Diagnosis of Latent and Late Syphilis

E. H. Terrill, M.D., Wichita

Read before the Sedgwick County Medical Society, May 21, 1929.

The effective management of any disease begins with its diagnosis, is developed upon the basis of a thorough understanding of its pathology; but the degree of success can be determined only by some method for the estimation of therapeutic efficiency.

In no condition are these facts more apparent than in syphilis, with its many dignostic difficulties and extreme diversity of manifestations. The Wassermann reaction properly employed, furnishes us not only with one of the most valuable diagnostic aids, but with the only simple means of approximating a quantitative measure of the efficiency of our various therapeutic methods.

But like any other laboratory procedure, it should not be considered infallible, neither should it be condemned because of an occasional disagreement with the clinical findings. Unfortunately, until recently, conflicting opinions with respect to various phases have been prevalent and have probably received undue emphasis, the literature containing many apparent contradictions. Now, with some of our previous ideas proven erroneous, and with a better understanding of the disease, as well as the variables of the serological reaction, much of this diversity of opinion has disappeared.

The procedure as originally introduced, is of course obsolete, but after numerous modifications and refinements of technique, it is now capable in proper hands of a high degree of accuracy and dependability. Divergent reports from various laboratories can in fact be so far reduced that repeated disagreements can definitely be regarded as evidence of faulty methods. The same is equally true of repeated unexplained discrepancies when compared with the adequately studied clinical findings.

The ultimate criterion by which all laboratory methods must be judged is the degree of conformity to the results of clinical and pathological study. Since

the Wassermann is no exception the serologist should be in a position to continuously compare his results not only with the clinical findings but to check them with other laboratories, for only by consistent agreement can he assure the reliability of his tests, and so merit deserved confidence. But while modern technique and adequate clinical control have resulted in a degree of dependability previously unattainable, a simultaneous better understanding of the pathology and mechanism of syphilis has brought to our realization as never before, the necessity for greater care in Wassermann interpretation. Particularly is this true in latent and late syphilis where weak positives or complete negatives even in the presence of definite clinical evidence are by no means infrequent.

Needless to say, the Wassermann is an intricate procedure requiring scrupulous care and attention to detail, and one so easily influenced by variables both known and unknown, that its full interpretation entails not only an understanding of serology, but of syphilis itself. One can therefore no longer either accept or interpret a Wassermann no matter how or by whom made. But assuming perfect technique, no report can be considered satisfactory that does not indicate the method and reagents used. The lack of a critical attitude on the part of physicians toward the work of the clinical laboratory and the prevalent tendency to ascribe equal value to all Wassermann reactions is too often paid for both in dollars and needless suffering by the patient. Stokes has well said, "Whatever savors of technical inexperience, of the injudicious or uncritical attitude, of personal motive or commercial interest, of haste, inaccuracy, or laxity of control, has no place in its performance."

There is a striking similarity between the drug clerk who advises the application of calomel to the suspected chancre, and the laboratory worker who with insignificant medical training makes the diagnosis and offers advice with respect to treatment. Some who loudly voice their disapproval of the first, accept the second through the laboratory report. We all know that its unquestioned acceptance as an indication of the presence or absence of syphilis according as it is positive or negative can not be vindicated.

The protein manifestations of syphilis together with the far reaching consequences of a mistaken diagnosis, requires of each of us his greatest skill in observation, and final interpretation of the available data. This means an accurate correlation of both clinical and laboratory findings and necessitates some degree of familiarity with laboratory procedure, combined with clinical experience.

If the serologist is to assume the responsibility for interpretation of the reaction, he deserves the same courtesies offered any consultant, and all necessary facts should be placed at his disposal. On the other hand if the clinician makes his own interpretation, he should understand that a positive or negative report means only that the serum in question did or did not contain complement fixing substances in sufficient quantity to be demonstrated by the method employed. The clinician must in justice to his patient familiarize himself with at least the fundamentals of Wassermann procedure, with the limitations of the test by the technique employed, and with the known factors which may modify the results. A moderate amount of properly directed study would eliminate many inquiries with reference to the significance of certain reactions. If to this is added careful clinical observation, there need be little reason for dissatisfaction with the reports of a competent laboratory. There is to some extent a failure to realize the necessity for interpretation of the reaction, which may in turn be the result of a limited circulation of literature dealing with this particular phase.

Before proceeding further, let us consider very briefly the fundamentals of the Wassermann reaction. Its precise nature still remains unknown, yet we do know that while almost specific for syphilis, it does not depend upon the presence of true immune bodies as do for example the agglutination tests such as the Widal.

There are five reagents entering into the reaction as follows: (1) the patient's serum, (2) the antigen, usually an extract of beef heart, (3) fresh guinea pig serum which contains the complement, (4) the amboceptor or hemolytic serum, obtained from a rabbit which has been given intravenous injections of washed sheeps corpuscles until its serum in high dilution has acquired the property of hemolyzing or laking these, and (5) a suspension of washed sheeps corpuscles in normal saline.

The mechanism of the reaction is as follows: A positive serum contains a substance capable of uniting the complement present in the guinea pig serum to the antigen or beef heart extract. When this occurs, the complement is firmly bound or fixed and incapable of any further activity, hence the general term complement fixation. The amount of complement thus affected depends upon the amount fo the reacting substance present in the patient's serum. The appearance of the mixture is not altered by this process, consequently a sort of indicator must be added. For this, hemolysis of sheeps corpuscles sensitized by the hemolytic serum is used, which can not take place except in the presence of complement and occurs to a degree depending upon the amount of complement remaining. So we add to the above mixture of patient's serum, antigen, and complement, incubated a sufficient time for fixation to take place, washed sheeps corpuscles and amboceptor or hemolytic serum in such quantities that the previously added complement will if still free, produce complete hemolysis. Obviously if this complement has been previously fixed to the antigen by the patient's serum, no hemolysis of the sheep cells can occur and we have what is termed complete fixation or a 4+ reaction. If, however, only a fraction or even none has been fixed, hemolysis will occur to a degree dependent upon the amount remaining, and we have as a result, reactions varying from 3+ to negative.

Few if any laboratory procedures involve more variables than the Wassermann reaction. Some of these are subject to our control while others are wholly unknown. For convenience they may be divided into four groups; those involving (1) the patient, (2) the specimen, (3) the technique, and (4) the serologist. These will be considered in the order named.

There occur variations due both to the stage, activity, duration, and type of the disease, and to the method and duration of treatment, which are among the most frequent as well as the most inconsistent and unexplainable of all the manifestations of syphilis; these are obviously not subject to our control.

It has often been shown that the ingestion of an appreciable quantity of alcohol within the 24 hours preceding the test may convert a weakly positive into a negative reaction. The ingestion of certain foods which tend to disturb the lipoid content of the serum may rarely produce what is termed an anticomplementary reaction. By this, we mean that the serum contains substances which seem to destroy more or less complement, so that no hemolysis occurs on addition of the sheep cells and hemolytic serum. This property of the serum is detected by the inclusion of a serum control.

Such a reaction may likewise occur in jaundice or uremia, or it may follow contamination of the serum by bacteria or by foreign substances from unclean syringes or needles. Excessive hemolysis due to the blood specimen being kept too long at high temperatures before removal of the serum may be an additional factor. Occasionally such reactions occur without demonstrable cause. An anticomplementary reaction can not be read but must simply be reported as such. A repetition later is advisable for a relatively high percentage are eventually found to be positive.

The effect of factors concerned with technique involves too much of intricate detail to be considered here. Let it be said, however, that while some points are subject to controversy, the relation of others is well established, and demands the careful consideration of the serologist.

In the last group, we place those influences which are responsible for the

slight differences in reports from competent laboratories and which can not be explained by any of the foregoing. In the ultimate analysis, these are found to reside in the training and attitude of the laboratory personnel, and in the degree of clinical control, and vary somewhat with individual workers of equal ability.

An appreciation of these fundamentals should better prepare us for the application of the Wassermann to the study of latent and late syphilis, for in these types the test is subject to the greatest variation. This can to a considerable extent, be explained by the pathology of the disease.

Latency is the natural outcome of the combination of factors controlling and influencing the development and progress of the infection. According to Eberson, the production of antibodies reaches a maximum late in the disease, which predisposes to latency without obvious lesions. Brown and Pearce have developed this idea still further, two factors being postulated which tend to repress the spirochetal activity, "One directed toward the spirochete itself, and the other whose object is the neutralization of toxic or harmful effects. These proceed in parallel directions, but not to an equal degree." Experimentally, progress of the disease follows the law of inverse proportions and that of sequence or progression. The first states that the duration of the active manifestations of the disease is inversely proportioned to the intensity and extent of the initial lesion. This is, however, subject to modification by the second, according to which syphilis when allowed to pursue an undisturbed course tends to progress in a definite manner, affecting tissues in an orderly sequence, due to their different susceptibilities, but to a variable extent depending upon the intensity of the defense reaction of the host. This tends to increase at the site of local injury produced by the spirochetes until their activity is checked, after which it again tends to decline. Healing of the lesion may follow, but the organisms still remain, and the cycle is repeated at intervals with fluctuations of balance between resistance and susceptibility over a period of years until finally the increased resistance of the host has rendered the organisms incapable of further injury. Thus we have the so-called spontaneous cures, which are probably only instances in which the resistance of the patient has been sufficient to prevent obvious damage to vital structures.

Warthin has further explained the long period of latency as the result of a relative immunity continuously maintained by a slow progression of numerous scattered foci, especially in the parenchymatous structures and cardio-vascular system. The lesion in this instance is the small focus of round and plasma cell infiltration in the lymph spaces, capillary vessels, vasa vasorum, and parenchymatous organs, which results in a slow fibrosis with eventual impairment of blood supply and actual replacement of parenchyma by scar tissue. The impairment of function of such organs is often not apparent until late, owing to their great reserve.

When this local defense reaction is at any time overcome, organisms may again be scattered thruout the system and new foci arise, some which may be visible and offer objective evidence of a relapse. Progression in this manner makes the patient with syphilis not only a relapser but a carrier, potentially infectious for many years after the disappearance of all objective evidence of the disease.

The severity of late or tertiary manifestations has in some respects never been adequately explained but appear to follow a decrease of resistance to the infection. While the organisms are usually few, tissue destruction may be extensive. This has been attributed to interference with the blood supply by the progressive endarteritis, or to a type of sensitization phenomenon. Late lesions usually follow a period of latency which has persisted for months or even years.

So, according to Brown and Pearce, "The manifestations of the disease presented in any given instance depend not only upon the general laws which govern syphilitic infections and reactions, but upon a number of other circumstances which include any and all conditions affecting the initiation of the infection, the

resistance of the host; and the pathogenic properties of the organisms themselves."

Following the spontaneous disappearance of the secondary manifestations, syphilis enters upon a period of latency during which insidious progress may alternate with periods of visible lesions. In view of the gradual decline in the positive tendency of the Wassermann reaction. clinical observation and familiarity with the land marks of the disease become of increasing importance, and the student of syphilis, while employing laboratory methods to the limit of their dependability, must rely chiefly upon clinical observation.

The production of those changes in the blood serum responsible for the positive Wassermann is intimately bound up with the defense reactions but subject to modification by a variety of influence, some of which are as yet undefinable. The incidence of positive reactions and their intensity is thought to be directly proportioned to the number of spirochetes present and their degree of activity; consequently where little or no tissue reaction occurs, the Wassermann may easily be negative. Figures for large numbers of untreated cases show from 40 to 65 per cent positives, while those previously well treated show as low as 15 per cent. If over five years has elapsed since infection in an obviously inadequately treated case, only careful judgment and observation can distinguish a serologically negative syphilis from one of arrest or latency. There is a certain spontaneous Wassermann negative tendency after the first two or three years which may allow a negative test, but this is by no means synonymous with clinical cure, for insidious progressive degenerative changes may continue under the guise of serological negativity, especially in neurological and cardiovascular syphilis; although as a general rule the latter is prone to give a high proportion of positives, even before definite signs or symptoms have developed. So frequently is this encountered that some suspect cardiovascular involvement where there is no indication of the site of the lesion.

Latent or asymptomatic syphilis is undoubtedly more prevalent than is generally believed, and is probably responsible for a large number of so-called false positives. So diverse or vague may be the symptoms or signs of late syphilis that many cases would undoubtedly be overlooked without the Wassermann reaction. This is even more true of latent cases with or without those indefinite symptoms which, while the results of a relapse, nevertheless are wholly nonsuggestive as to the underlying cause. Early recognition of such cases is of extreme importance in avoiding the tertiary lesions prone to develop later. There appears to be no limit to the time which a positive reaction may persist. In untreated cases with late active manifestations, positives may be obtained in well over 90 per cent, while in those who have had inadequate treatment, this figure may fall to 75 per cent.

The spontaneous Wassermann negative tendency in latent and late syphilis, together with the often unexplained sudden wide variations in intensity have repeatedly demonstrated the futility of implicit reliance upon a single serological examination. It is of practical importance that many of these positive fixations are not complete and occur only with the most sensitive technique.

So a negative or weakly positive reaction demands a clear appreciation of the factors influencing the results of the test, which can only be interpreted in conjunction with all other available data. Not only repeated tests but the most searching history and examination, possibly followed by long observation may be necessary in order to assure the absence of syphilis.

R

TUBERCULOSIS ABSTRACTS

The first clear differentiation between the bovine and human types of tubercle bacillus was made in 1898 by Theobald Smith. When it became evident that the bovine tubercle bacillus may be conveyed to the human through the drinking of milk, the sanitary control of this important food was demanded. Pasteurization and the gradual but steady elimination of tuberculous cows have undoubtedly been factors in reducing tubercu-

losis, particularly the osseous and lymph glandular forms commonly seen in children. In England, the problem seems to be more difficult and unyielding than it is in the United States, according to William G. Savage, health officer of Somerset, from whose book, "The Prevention of Human Tuberculosis of Bovine Origin," most of the following information is abstracted.

HUMAN TUBERCULOSIS OF BOVINE ORIGIN

There is little statistical evidence to prove the direct relationship between the extent of bovine tuberculosis among cattle and the incidence of human tuberculosis of bovine origin. Satisfying studies of this kind are obviously difficult to make, and those that have been made are inconclusive.

PREVALENCE OF DISEASE

The exact prevalence of bovine tuberculosis among humans is not easy to determine. It is impossible to decide by clinical means whether a given case is of human or bovine origin, although the organism may, by a somewhat laborious bacteriological procedure, be isolated and identified. Several bacteriologists have undertaken studies of this kind, and their total number, while not large, is enough on which to form an estimate of the percentage of bovine tuberculosis. On the basis of these studies, Savage arrives at the conclusion that 1 per cent of the respiratory and 23 per cent of non-respiratory cases in England are of bovine origin. From this, he calculates that in 1927 a total of 310 cases of respiratory and 1,635 cases of non-respiratory tuberculosis which ended in death were of bovine origin. Moreover, the cases not ending in death, while not ascertainable, must be considerable, and responsible for a vast quantity of suffering.

EXTENT IN UNITED STATES

In the United States, Park and Krumwiede studied in 1910 the bacteriological origin of 435 cases of tuberculosis. About 7 per cent of the entire group (all ages) were of the bovine type. However, of the group under five years of age, about one-third were of bovine origin, and slightly over half of these were involvements of the cervical glands. Subsequent to that study, New York City adopted the practice of pasteurizing all milk supplies, with the exception of about 1.5 per cent which was certified. This did not apparently affect the incidence of pulmonary tuberculosis among children, but the percentage of cervical cases of bovine origin was reduced to less than half its previous figure.

METHOD OF TRANSFER

Human tuberculosis of bovine origin may nearly all be charged to the use of milk containing living tubercle bacilli, though cream, butter and cheese cannot be altogether ignored. The milk is infected usually from the lesions on the udder, though contamination of milk from feces containing excreted tubercle bacilli is also common. Every cow that reacts positively to the tuberculin test should, therefore, be regarded as a potential source of infection, for both human beings and cows.

CONTROL OF BOVINE TUBERCULOSIS

Methods for dealing with the problem in the United States are primarily twofold; the eradication of the disease among cattle by slaughtering positive tuberculin reactors and the pasteurization of milk. The Federal Department of Agriculture, through the various state bureaus and departments of animal industry, has pusued with vigor its policy of "cleaning" herds and accrediting those free from the disease. While there are many practical difficulties in the way and the cost in terms of subsidies for slaughtered cattle is expensive, the percentage of infected cows is gradually lessening.

The practice of "designating" or certifying certain milk will probably never be practicable on a wide scale because

of the difficulty of adequate, reliable inspection. Nor does certification take sufficiently into account possibilities of infection other than tuberculosis, such as scarlet fever, septic sore throat and typhoid fever. Recently, cases of undulant fever have been reported as having been acquired from accredited herds free from tuberculosis.

HEAT TREATMENT OF MILK

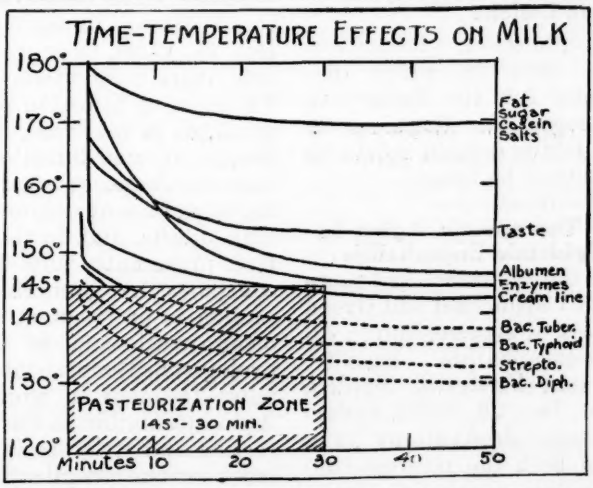
Pasteurization admittedly has its failings. Machinery and methods have been perfected to a high degree of efficiency, but the human factor frequently fails, and this can be controlled or supervised only with great difficulty. Moreover, standards regulating the process very widely according to communities; pasteurization may mean something entirely different in one city than it does in another. However, efforts are now being made by the U. S. Public Health Service to restore order out of chaos. With the aid of leading state health officers, the Service has drafted a Standard Milk Ordinance, suitable for adoption by municipalities. The particular advantage of the ordinance is that it defines clearly the many commercial and technical terms involved in milk production methods. Pasteurization, it states, "shall be taken to refer to the process of heating every particle of milk or milk products to a temperature of not less than 145 degrees Fahrenheit, and holding at such temperature for not less than 30 minutes in pasteurization apparatus approved by the health officer, the temperature and time being automatically recorded by a temperature and time recording device approved by the health officer."

NO INJURIOUS EFFECTS

Milk properly pasteurized is not injured as a food to any appreciable extent. Apparently, Vitamins A and B are not affected, Vitamin C is reduced in amount, and little is known as to the fate of Vitamin D. This slight loss of vitamin content may be restored in a child's feeding by the addition of a small quantity of fruit juice.

How heat at given periods of time affects the food constituents and qualities of milk, as well as certain common bacteria which may contaminate milk, is indicated in the chart.

According to the author, the American method of dealing with bovine tuberculosis is not applicable in England because the dairy business is organized on a much more haphazard and decentralized basis, making supervision almost impossible, and also because the slaughter of some 40 per cent of the dairy cattle (which would be necessary) would impoverish the state and also cause a milk famine. He suggests a practical but elaborate plan of gradually cleaning the herds. Space forbids discussion of details, which seem sound and workable.



Apparently assuming that the general practice of pasteurization would be too readily seized upon as a substitute for the more radical measure of eliminating tuberculosis among cattle, the author of the proposed English plan minimizes the value of pasteurization and speaks of it as "a confession of failure." With this feeling, American sanitarians would surely not agree. Clean milk regulations have not discouraged the campaign to free cattle from tuberculosis; that being a worthy object in itself, viewed purely from an economic standpoint. Pasteurization is not advocated as a means of making dirty milk clean. The ideal is to produce milk as clean as possible and to supplement this by heat treatment. The possibilities of contaminating this food product in its devious trip to the consumer are numerous; and pasteurization is but an added protection against tuberculosis, as well as many other dangerous infections.

Roentgenographic Characteristics of Bone Lesions

Charles G. Sutherland, Rochester, Minn. (J.A.M.A., Dec. 28, 1929), discusses the reasons for the failure to make a roentgenographic diagnosis of bone lesions and details certain points on which a diagnosis may be based.

Stramonium As Therapeutic Agent In Sequelae of Epidemic Encephalitis

Encouraged by the favorable and more complete report of Carmichael and Green on the effectiveness of stramonium in diminishing post-encephalitic rigidity. A. L. Jacobson and Frederick Epplen, Seattle (J.A.M.A., Dec. 28, 1929), undertook to check these observations in a series of cases of both the postencephalitic and the idopathic paralysis agitans type. From three to ten years ago, each of these patients, except a few with idiopathic agitans, was stricken with epidemic encephalitis, ranging from an evanescent diplopia to two years of bedfast confinement. In all these cases there was apparent recovery, followed in from one month to three years by various degrees of the parkinsonian syndrome. The U. S. P. tincture of stramonium was employed in doses ranging from 20 to 70 minims (1.2 to 4.3 cc.), three or four times a day, administered orally. It proved to be an excellent palliative remedy for all symptoms of the parkinsonian syndrome of postcephalitic origin, with the single exception of the pareses, which remain unbenefited. It is of great benefit in idopathic paralysis agitans, but not so much so as in the syndrome of post-encephalitic periods, and large doses are necessary. Toxic manifestations are rare and seemingly evanescent.

To the Editor of the Journal:

I wish to inform the subscribers of the *Medical Interpreter* that I have resigned as editor of this publication in December, 1928, and that I am no longer responsible in any manner for the actions of its promoters.

ALBERT ALLEMANN, M.D.,
Washington, D. C.

Gonorrhea of Anus and Rectum

Of the 1,218 rectal cases seen by Herbert T. Hayes, Houston, Texas (J.A.M.A., Dec. 14, 1929), in seventy-five, or 6.2 per cent, there were infection with gonorrhea. Th mode of infection was unnatural sex practices in four men, ruptured prostatic abscess in one, infection in two children from carelessness of attendants, accidental infections of unknown origin in three male adults, and, in the remaining sixty-five, presumably auto-inoculation. Hayes concludes that gonorrhea of the anus and rectum is of frequent occurrence and is often overlooked by proctologists and urologists. Gonorrheal proctitis is much more frequent in women than in men. Auto-inoculation is the chief mode of infection and stricture of the rectum is the most serious complication encountered. It is rarely found in the white race but is frequent in the colored.

RELAXATIVES

"What are you doing that for, mother?" asked little Norman as he saw his mother sterilizing the dishes that come from the sickroom.

"Because, dear, poor daddy has germs and the germs get on the dishes. I boil the dishes and that kills the germs?"

Norman turned this over in his mind for a minute or two and then inquired, "Mother why don't you boil daddy?"—Boston Transcript.

THE JOURNAL
of the
Kansas Medical Society

W. E. McVEY, M. D. - - Editor

ASSOCIATE EDITORS—C. W. REYNOLDS, L. B. SPAKE, P. S. MITCHELL, O. P. DAVIS, J. T. AXTELL, J. F. GSELL, C. C. STILLMAN, ALFRED O'DONNELL, C. S. KENNEY, I. B. PARKER, C. H. EWING, W. F. FEE.

Subscription Rates: $2.00 per year. 20c single copy.
Advertising rates furnished promptly on application.

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COOPERATION

There is one word in the English language that has continued to grow in importance with better understanding of the economic principles upon which a wholesome environment, prosperity, health and happiness most depend; a word whose meaning has grown more and more comprehensive with the widespread application of the thing it stands for. That word is cooperation and it now stands for success in so many departments of the world's work that even the medical profession can no longer afford to ignore it entirely. Even the churches, or the representatives of the churches, are apparently compelled to resort to co-operative methods in order to stem the tide of their waning influence.

The laboring men first demonstrated the possibilities in cooperation and rescued themselves from oppression and starvation wages. That these cooperative principles have now been adapted to meet the interests of many industrial pursuits indicates a recognition of virtues other than protection or defense. By co-operation business methods have been improved and destructive competition has been eliminated, so that now we hear and read a good deal about cooperative production, cooperative buying, cooperative selling, and cooperative attitudes toward this or that matter of legislation. But none of these things register with the medical profession. And while we are not much disturbed or much concerned about the possibilities for good or ill to ourselves in cooperative methods we have become more and more the tools by which these methods are successfully carried out by other groups.

The members of the medical profession are too individualistic in their sentiments, in their ambitions and in their demands to pursue with enthusiasm any consistent cooperative program. It has been conceded by some of the most astute politicians in the state that we could have any reasonable legislation we desired if there was any sort of unanimity in the demand and apparent cooperation in the efforts put forth to secure it. It has been demonstrated now many times that doctors, like other people, have party affiliations and choice of candidates and, like other people, they may forget their party affiliations and revise their choice of candidates if the prospect for personal gain or personal aggrandizement seems to justify it, but unfortunately very few of them are willing to go to such extremes when the question involved concerns the medical profession as a whole.

In the last campaign it was soon learned that our members, or some of them, would exert themselves a little to help elect a candidates who was favorable to our bill, if he also happened to be their choice of the candidates, but there were very few whose choice of candidates was determined by their attitude toward our bill. In fact there were only about 200 of our members that in any way manifested a spirit of cooperation and

only 129 that were sufficiently interested to get a few signatures to petitions.

Why ask for more laws anyway? The ones we have are not very efficiently enforced and no one seems to care much whether they are or not, unless he himself suffers in consequence of such lack of enforcement and then he wants some one else to do it. There are men who are practicing medicine in this state who have never been licensed by any board of registration. There are numbers of men who have been properly licensed to practice medicine in this state who are practicing illegally because they have failed to register with the county clerk of the county in which they are located, as the law requires. Some years ago it happened in one of the most populous counties in the state that a physician went to the office of the county clerk for the purpose of registering but the clerk was unable to find the book used for the purpose, in fact, had forgotten there was such a book or such a law. There have been hundreds of changes of location during the past year and one wonders how many of these men who have moved into other counties have taken the trouble to register again. While this in itself is a matter of no particular consequence, it shows how carelessly we observe the provisions of the law for the passage of which so much effort was required.

It seems that the duty of enforcing the medical practice act doesn't lie very heavy on any one. No one wants to be the complaining witness in his own community although he may be able to accumulate the necessary evidence of violations of the law. The State Society was instrumental in getting the law passed and it seems a reasonable proposition that it should assume the duty of seeing that it is properly enforced. It might even be a profitable investment for the Society to spend a little money in an effort of this kind.

CHIPS

That inhalations of carbon dioxide in oxygen may prove to be therapeutically effective in pneumonia is suggested. Henderson, Haggard, Coryllos and Birnbaum reported their studies along this line in Archives of Internal Medicine, January 1930. From their conclusions it appears that massive lobar or lobular atelectasis frequently occurs after operations and upon this condition post operative pneumonia may develop. Because the inhalation of carbon dioxide induces deep breathing it is applicable to the relief of this atelectasis and prevents pneumonia. They state that "In pneumonia it is the blocking of the lung airways, bronchi or bronchioli, by plugs of thick and sticky secretion which is the critical morbidic factor producing atelectasis and the conditions characteristic of an undrained infection." They suggest that successful treatment with carbon dioxide inhalations depends on early administration.

When do the tonsils lose their protective function and become a source of danger? How are we to determine when convalescence from an attack of acute rheumatism is so complete that we may safely remove diseased tonsils in order to prevent or minimize the chances of a further attack? These questions were suggested by Dr. Herbert Tilley in his paper presented at the Congress of the American College of Surgeons last October (Surgery, Gynecology and Obstetrics, Jan. 1930). Some cases from his own experience illustrate the need for more serious and thorough consideration of these matters.

Dr. Tilley also states that neither he nor any of his colleagues have had any pulmonary complications after tonsil operations. In fact he seems to think that the English operators are immune to these misfortunes.

On the hypothesis that the giant epithelial cell of the thymus subserves the

function of controlling the correct, normal and healthy rate of epithelial mitosis and cell division, Hanson (Minnesota Medicine, February, 1930) prepared an extract of thymus gland for the treatment of carcinoma. Cases are reported in which diagnosis had been made at operation, and the effects of subsequent treatment with this extract were confirmed by examination of the tissues at later operations. Very marked changes were observed, a necrosis, softening and absorption of at least a part of the tumor. The small number of cases reported give insufficient data for any definite conclusions as to the therapeutic value of the treatment or as to the real relationship of the means employed to the pathologic changes. Other cases are under treatment and later reports of these may be made.

Dr. Randell of Marysville writes: "It is a fact that there are very few of our soda fountain and soft drink parlors which have been using effective methods of sterilizing drinking glasses. It is not very likely that effective methods of sterilization will be enforced by law, therefore it has occurred to me that we could assist in preventing the spread of infections by educating and instructing our infected patients to use drinking straws instead of drinking directly from the glasses. Among other conditions those patients affected with syphilis, tuberculosis, Vincent's angina and oral sepsis should be so instructed. The doctor perhaps will recall this suggestion the next time he happens to meet the syphilitic tongue or lip at the soda fountain."

The following is the substance of a letter mailed to the registered physicians of the State by R. A. Raymond, Executive Secretary of the Crippled Children's Commission:

"The 1929 Kansas Legislature created a temporary commission 'to inquire into and report upon the number, distribution and condition of crippled children and physically disabled persons' of Kansas This commission has been given all the powers of a legislative committee, as provided by law.

"The commission hopes to complete the taking of the census throughout the state during the first week in February. It is receiving the co-operation and assistance of the public, private and parochial schools. All teachers have been provided with census cards for securing and recording detailed information about individual crippled children.

"The state commission feels that the physicians can be particularly helpful in the recording of these cases. We are enclosing a copy of the census card which has been distributed to the schools. If, however, we could receive direct from you a record of cases with which you have been in contact, it would materially assist the commission in arriving at an understanding of the physical condition of a large number of cases. If you will let us know the number of cards you will need we will forward these to you at once. Should you prefer, however, to send in list from the names and addresses, the commission will be glad to receive them.

"Many of the children thus reported will have had medical care, undoubtedly. Others may have failed to receive treatment because of inadequate hospital facilities, or through lack of finances. Other needs will include special education, pre-vocational training, and suitable employment. The experience of individual physicians in all of these matters recorded on the census blank, will materially aid the commission in making definite recommendations to the next session of the Legislature."

In earlier times the possibility of being buried alive added much to the terrors of the living. One may now feel assured that when the undertaker has finished his job there is no danger of being buried alive. However in cases of sudden death friends and relatives seem to think, at least to hope, that life may not be extinct and insist that various methods of resuscitation be tried. The recen numerous reports of such resuscitations seems to have strengthened this hope. In regard to this matter the following is quoted from the J.A.M.A. of January 11: "The power to revive the

dead is one that the physician is often, but vainly, expected to exhibit. The alleged miracles of such revivals by injecting epinephrine into the heart are always widely reported in the newspapers. Physicians who have heard of these alleged resuscitations are tempted to employ the same means. If the death was real, no harm and no benefit results. Revival follows sometimes, perhaps not because of the treatment but in spite of it. In such cases there is indeed grave danger that serious injury may follow from the treatment that the patient has received. The evidence seems conclusive that, if the patient revives after such an inracardiac injection, he would have revived without it. Intracardiac injection is not a justifiable measure for resuscitation."

Council Meeting

The annual mid-winter meeting of the Council was held in Kansas City, Kansas, in the Huron Building on January 21.

The meeting was called to order by the President, Dr. E. S. Edgerton at 10:30 a. m. Others present were Drs. L. F. Barney, Geo. M. Gray, L. B. Spake, P. S. Mitchell, O. P. Davis, J. T. Axtell, C. C. Stillman, J. F. Gsell, Alfred O'Donnell, I. B. Parker, C. H. Ewing, W. F. Fee, J. F. Hassig and W. E. McVey, Editor.

The nature of the program for our 72nd annual meeting which will be held in Topeka May 6, 7 and 8, 1930, was discussed, and on request of Shawnee County Medical Society it was unanimously voted to devote the program on Wednesday, the second day of the meeting, to addresses by our five guests. The first and third days of the meeting will be devoted to papers by our own members. The names of several doctors of national and international reputations were submitted with a view of extending invitations to them.

Dr. Morris Fishbein, Editor of the American Medical Association Journal, accepted an invitation a year ago to be our guest at our next annual meeting, and it was suggested that there be a public meeting; but this matter was left to the judgment of the local committee.

It was decided to hold the first meeting of the House of Delegates on Tuesday at 7:30 p. m., and a joint meeting of the Council with the county secretaries at 12:30 p. m. on the first day of the meeting at a complimentary luncheon to the secretaries.

Dr. McVey presented the following amendment to Section 1, of Article X of the Constitution to read as follows:

ARTICLE X—TERMS OF OFFICE

Section 1. The term of office of the President shall be for one year and shall begin on the first day of January following his election. The term of office of the President-elect shall be from the date of his election until the first day of January following. The term of office of the Vice President and the Treasurer shall be for one year. The term of office of the Secretary and of the Councillors shall be for three years. All of these officers shall serve until their successors are elected and installed.

Dr. P. S. itchell, councillor from the Third District, reported in detail some of the difficulties he has been called upon to adjust among the organizations in his district. In one instance the controversy involved the ethical question of commercial contract practice.

Dr. Mitchell's report was approved and placed on file and his action was unanimously endorsed. The other Councillors made verbal reports, also the Treasurer. Dr. McVey, Chairman of the Board of Public Relations made the following report.

BUREAU OF PUBLIC RELATIONS OF THE KANSAS MEDICAL SOCIETY

May 1, 1929, to January 1, 1930

Received		
Balance on hand May 1, 1929	$152.64	
Received May 1, 1929 to Jan. 1, 1930	800.00	$952.64
Expended		
Salaries and Expenses	$739.83	
Postage	50.15	
Stationery	22.25	
Miscellaneous:		
Exec. Sec. Expense to Meeting in K. C.	5.40	
Telephone calls	2.10	$919.73
Balance on hand January 1, 1930		$132.91

Accepted.

Dr. McVey, Editor, made the following financial report of the Journal:

JOURNAL OF THE KANSAS MEDICAL SOCIETY

Receipts and disbursements by Editor, January 1, 1929, to January 1, 1930.

Received		
Journal Advertising	$5,159.25	
Sales and Subscriptions	288.41	
Other Sources	5.58	
Kansas Medical Society	2,000.00	$7,453.24
Expended		
Printing Journal	$2,559.30	
Stock and Stationery	746.75	
Salaries and wages	2,520.00	
Postage	171.73	
Electrotypes	144.74	
Office rent	300.00	
Two Filing Cabinets	36.00	
Miscellaneous	73.18	$6,551.70
Net amount earned		$ 901.54

If the normal income from subscriptions at $2.00 per member is calculated as a part of the receipts, instead of the amount paid the editor, the Journal made a clear profit last year of $1,901.54 over and above all expenses.

Receipts and disbursements by Editor, May 1, 1929, to January 1, 1930.

Received		
Advertising	$3,531.92	
Sales and Subscriptions	44.33	
Other sources	5.38	
Kansas Medical Society	2,000.00	$5,581.80
Expended		
Printing Journal	$1,723.30	
Stock and Stationery	503.25	
Salaries and wages	1,680.00	
Postage	110.15	
Electrotypes	144.74	
Office rent	200.00	
Miscellaneous	50.27	$4,412.01
Balance		$1,169.79

Accepted and filed.

On motion by Dr. Hassig, regularly seconded and carried Dr. McVey was re-elected Editor of the Journal for the ensuing year.

The Secretary presented his expense account since May 10, 1929.

Stenographer salary 8 months	$600.00
Stamps	60.00
Miscellaneous	44.91
Total	$704.91

Which was allowed.

Meeting adjourned.

J. F. Hassig, Secretary.

SOCIETIES

DECATUR-NORTON COUNTY SOCIETY

The Decatur-Norton County Medical Society held its regular meeting at the Commercial Club rooms, Norton, Kansas, Wednesday, January 22, 1930, 2:30 p. m. The following interesting program had been arranged:

Business meeting, election of officers, payment of dues. Paper on Vincent's Angina by Dr. E. M. Bryan, Sanatorium; Diagnostic Problems in Urology, by Dr. Nels F. Ocherblad, Kansas City, Missouri, and a paper by Dr. Robert W. Diver, Clay Center, Kansas.

Dinner at Kent Hotel, 6:00 p. m.

W. Stephenson, M.D., Sec.

SHAWNEE COUNTY SOCIETY

The February meeting of the Shawnee County Medical Society was held at the Hotel Kansan on Monday evening, February 3, 1930. The officers of the Society designated this meeting in honor of Dr. C. A. McGuire. Dr. S. R. Slamaker of Chicago was the guest speaker. Dr. Slamaker discussed "The Interpretation of Some Heart Murmurs."

Earle G. Brown, M.D., Sec.

DICKINSON COUNTY MEDICAL SOCIETY

The Dickinson County Medical Society met at the Chamber of Commerce Rooms at Abilene, Kansas, as guests of the Abilene doctors. There were ten doctors present. Dr. S. N. Chaffee read a paper on Nostrums and Proprietary Remedies. Dr. J. W. DeMand of Lincolnville, Kansas, told of the post graduate work which he recently took in Chicago. Both papers were much enjoyed and well discussed. Dr. T. R. Conklin, Sr., was elected delegate to the state convention. The next meeting will be in Herington, Kansas.

Dr. Daniel Petersen, Secy.

DEATHS

Harold W. Anderson, Salina, aged 27, died at Bell Memorial Hospital, December 15, of lobar pneumonia. He graduated from the University of Kansas School of Medicine in 1928 and at the time of his death was an instructor in pathology in that institution.

J. Watson Campbell, Halstead, aged 46, died January 27. He was graduated from the University of Kansas School of Medicine in 1914. He was a member of the Society.

James Monroe Winegar, Hamilton, aged 79, died December 10, 1929, of cerebral hemorrhage. He graduated from College of Physicians and Surgeons, Keokuk, Iowa, in 1884.

MEDICAL SCHOOL NOTES

Dr. Thomas G. Orr and Dr. Frank F. Teachenor attended the meeting of the Western Surgical Association at Del Monte, California, which was held in December. Dr. Orr read a paper on "Ascending Biliary Infections Following Cholecystoduodenostomy." Dr. Teachenor was re-elected Secretary and Dr. Orr was re-elected Treasurer. Dr. L. F. Barney was elected a member at this meeting. The next meeting will be held in Kansas City, Missouri. Dr. Orr was appointed Chairman of the Committee on Arrangements.

Dr. Russell L. Haden was presented with the gold medal of the Radiological Society of North America at the society's fifteenth annual meeting in Toronto, Ontario, December 2, for his research work in "*x*-Ray Study of Dental Infection." Only eighteen persons have been awarded the radiological society's gold medal, including Mme. Curie of France. Dr. Haden is Head of the Department of Experimental Medicine of the Medical School.

Dr. Ralph H. Major read a paper before the Tri-States Medical Association, Memphis, Tennessee, January 14th, on "Some Phases of Arterial Hypertension."

The following members of the faculty were on the program of the Southern Medical Association at its recent meeting in Miami, Florida: Dr. E. T. Gibson, Dr. Paul F. Stookey, and Dr. Ferdinand C. Helwig.

Dr. Robert M. Isenberger has returned to Kansas City to resume his teaching at the Medical School at the beginning of the second semester.

Dr. Harold W. Anderson, Salina, Kansas, aged 27, died at the Bell Memorial Hospital, December 15, of lobar pneumonia. Dr. Anderson was Instructor in the Department of Pathology at the Medical School.

The Bacteriology of Infant Diet Materials

It is not generally realized, the extent to which Mead Johnson & Company carry their research.

Efficient and systematic as are the research activities carried on for years in their own laboratories, this progressive house is constantly adding fellowships at leading universities and other institutions.

One of these has recently corroborated* a fact of great importance to all who feed infants: No Mead Product contains hemolytic streptococci or other pathogenic bacteria.

The significance to pediatricians of this brief statement lies in the fact that the presence of hemolytic streptococcus has been suspected in infant diet products, its relationship to scarlet fever, septic sore throat, enteritis, etc., naturally being a source of alarm.

It is reassuring to all physicians to know that not only have Mead Products never been under suspicion but that from authoritative unbiased soarces comes additional proof that as a result of careful technic and long experience, Mead Products are bacteriologically clean and safe to prescribe: Dextri-Maltose, Recolac, Casec, Lactic Acid Milk, Powdered Protein Milk.

*New York State Agricultural Experiment Station Bulletins Nos. 153 and 154.

Call for the Eleventh Convention for the Revision of the Pharmacopoeia of the United States of America

Boston, Mass, January 25, 1930.

In compliance with the provisions of the Constitution and By-Laws of the United States Pharmacopœial Convention, the President of the Convention hereby invites the several bodies, entitled under the Constitution to representation therein, to appoint delegates to he Eleventh Decennial Convention to meet in Washington, D. C., on May 13, 1930, and the attention of all concerned is invited to the following extract from the Constituytion and By-Laws:

Chapter I, Article VIII, of the By-Laws of the United States Pharmacopœial Convention provides that the President of the Convention:

"shall issue on or about the first of May of the year immediately preceding that of the decennial meeting, a notice inviting the several bodies, entitled under the Constitution to representation therein, to send delegates to the next meeting. He shall repeat the notification eight months later, and shall request the medical and pharmaceutical journals of the United States to publish the call for the said meeting."

Article II, Section 1, of the Constitution provides:

"The members of the United States Pharmacopœial Convention, in addition to the Incorporators and their associates, shall be delegates elected by the following organizations in the manner they shall respectively provide: Incorporated Medical Colleges, and Medical Schools connected with Incorporated Colleges and Universities; Incorporated Colleges of Pharmacy, and Pharmaceutical Schools, connected with Incorporated Universities; Incorporated State Medical Associations; Incorporated State Pharmaceutical Associations; the American Medical Association, the American Pharmaceutical Association, The American Chemical Society, the National Association of Retail Druggists, and the National Association of Boards of Pharmacy; *provided that no such organization shall be entitled to representation unless it shall have been incorporated within and shall have been in continuous operation in the United States for at least five years before the time fixed for the decennial meeting of the corporation.*"

Section 2 of the Constitution provides:

"Delegates appointed by the Surgeon-General of the United States Army, the Surgeon-General of the United States Navy, and the Surgeon-General of the United States Public Health Service, the Secretary of Agriculture, the Secretary of Commerce, the Association of Official Agricultural Chemists, the Association of American Dairy, Food and Drug Officials, the National Wholesale Druggists' Association, the National Dental Association, the American Drug Manufacturers' Association, the United States Division of Customs, and the University of Havana, and by the organizations not hereinbefore named which were admitted to representation in the Convention of 1900, shall also be members of the corporation. Each body and each branch of the United States Government above mentioned shall be entitled to send three delegates to the meetings of this corporation. But no such delegates as are provided for in this article shall be members until their credentials shall have been examined and acted upon as provided for by the By-Laws. Delegates admitted as members at any decennial meeting shall continue to be members of the United States Pharmacopœial Convention until their successors shall have been appointed and admitted as delegates to the ensuing Convention and no longer."

REID HUNT, M.D.,
President of the United States Pharmacopœial Convention of 1930.

LYMAN F. KEBLAR, M.D.,
Secretary, 1322 Park Road, N. W., Washington, D. C.

Treatment After Prostatectomy

L. P. Player, San Francisco (J.A.M.A., Nov. 2, 1929), found seminal vesiculitis in 25 per cent of sixty carefully followed cases, which he believes warrants the statement that the surgeon's responsibility does not cease when the closure of the wound has taken place and voiding has been established. He concludes that recognition and proper treatment of seminal vesiculitis occurring after prostatectomy are just as important factors in the comfort and longevity of the patient as preoperative care is to a safe prostatectomy.

Postoperative Complications of Prostatectomy

The study of the postoperative complications of prostatectomy is an aid in further reducing the mortality of this operation, according to A. H. Peacock, Seattle (J.A.M.A., Nov. 2, 1929). The chief complications are renal failure, cardiac failure, pulmonary infections, urinary in-

fections and embolism. These complications can be handled better by giving a longer time to preliminary drainage and preparation. The prostatic patient often has multiple pathologic changes and should be studied thoroughly. In 117 cases, the mortality was 6.8 per cent; of the deaths 37.7 per cent were due to renal failure, 25 per cent were due to cardiac failure and 25 per cent to pulmonary disease.

℞

Prevention of Deformities in Chronic Arthritis

The deformities of arthritis are more serious, as far as the patient is concerned, than any other feature of the disease, since they persist and frequently get worse after the arthritis has ceased unless they are prevented. It is this feature of the treatment of arthritis which Loring T. Swain and John G. Kuhns, Boston (J.A.M.A., Dec. 14, 1929), emphasize particularly in this paper, believing that prevention is possible. As to the methods of prevention in general, their experience has given them a few rules, which are that: (a) When a case of arthritis is first seen, a careful appraisal of the condition of the various joints should be made and steps should be taken at once to prevent the usual deformities from occurring. (b) Throughout the treatment constant vigilance must be exercised to prevent the assumption of positions likely to lead to deformity. (c) The physician should also bear in mind that rest and exercise of the joint are essential to its well being. (d) Motion should be encouraged in all stages of the disease but must never be forced; the activity should consist wholly of the patient's attempt to do what he can in the normal use of the joint. (e) Rest in a position least likely to cause strain or contracture should be secured when the joint is not in use, particularly at night, as position during sleep is most important. Each joint is taken up in turn and the treatment employed by the authors to prevent or lessen deformities is detailed.

℞

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"Yes."
"What is your work?"
"Exploring Central Africa."

"My friend," asked the missionary, "are you traveling the straight and narrow path?"

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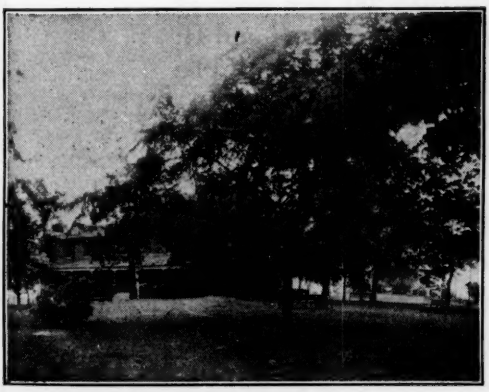

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CHARTERED BY THE TERRITORIAL LEGISLATURE OF KANSAS, FEBRUARY 18, 1860

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Committee on Necrology—E. E. Liggett, M.D., Chairman, Oswego; J. F. Hassig, M.D., Kansas City; W. E. McVey, M.D., Topeka.

Members of the Component County Societies are members of the Kansas Medical Society. Physicians residing in counties where no County Society exists may join the society of an adjoining county. Physicians residing where no County Society exists, who are members of a district or other independent society approved by the Council, may be admitted to membership.

ANNUAL DUES $7.00, due on or before February 1st of each year.

Dues should be paid to the Secretary of the Component County Society, or, if not a member of a County Society, to the Secretary of the Kansas Medical Society.

OFFICERS FOR 1929

COUNTY	PRESIDENT	SECRETARY	MEETINGS HELD
Allen	Garlinghouse, O. L., Iola	P. S. Mitchell, Iola	
Anderson	Johnson, W. K., Garnett	Milligan, J. A., Garnett	2nd Wednesday
Atchison	Dingess, M. T., Atchison	Horner, T. E., Atchison	1st Wed. ex. July and August
Barton	I. J. Brown, Hoisington	L. R. McGill, Hoisington	1st Tuesday, Jan., Apr., June, Oct.
Bourbon	W. S. Gooch, Fort Scott	R. Y. Strohm, Fort Scott	2nd Monday
Brown	H. J. Deaver, Sabetha	S. M. Hibbard, Sabetha	2nd Friday
Butler	G. G. Whitley, Douglas	J. M. Devereaux, El Dorado	2nd Friday
Central Kansas	L. V. Turgeon, Wilson	F. K. Meade, Hays, Kan.	Dec., March, June, Sept.
Cherokee	R. C. Lowdermilk, Galena	W. H. Iliff, Baxter Springs	2nd Monday
Clay	C. C. Stillman, Morganville	X. Olsen, Clay Center	2nd Wednesday
Cloud	Ellis Starr, Concordia	R. E. Weaver, Concordia	Last Thursday
Coffey	H. T. Salisbury, Burlington	A. B. McConnell, Burlington	
Cowley	Wentworth, J. L., Arkansas Cy	Beatson, L. M., Arkansas City	1st Tues. ex. July, Aug., Sept.
Crawford	Kiehl, O. B., Pittsburg	Rush, F. H., Pittsburg	3rd Thursday
Decatur-Norton	Cole, C. W., Norton	Stephenson, Walter, Norton	Called
Dickinson	T. R. Conklin, Abilene	D. Peterson, Herington	
Doniphan	A. E. Cordonier, Troy	W. M. Boone, Highland	1st Tues. Jan., Apr., July, Oct.
Douglas	A. J. Anderson, Lawrence	R. B. Hutchinson, Lawrence	1st Thursday
Elk	R. C. Hutcheson, Elk Falls	DePew, F. L., Howard	Called
Finney	C. Rewerts, Garden City	O. W. Miner, Garden City	
Ford	C. E. Bandy, Bucklin	W. F. Pine, Dodge City	Last Wednesday
Franklin	Wm. J. Scott, Ottawa	Davis, G. W., Ottawa	
Harper	C. E. Ressler, Anthony	A. E. Walker, Anthony	3rd Wed., Mar., June, Sept., Dec.
Harvey	Norris, H. H., Whitewater	Martin, M. C., Newton	1st Monday
Jackson	M. S. McGrew, Holton	C. A. Wyatt, Holton	1st Wed., Jan., Apr., July, Oct.
Jewell	J. E. Hawley, Burr Oak	C. W. Inge, Formosa	
Johnson	Jones, C. W., Olathe	Bronson, D. E., Olathe	Second Monday
Kingman	C. W. Longenecker, Kingman	H. E. Haskins, Kingman	
Labette	Stevenson, O. E., Oswego	Naramore, J. T., Parsons	2nd Thursday ex. summer months
Leavenworth	Leon Matassarin, Leavenworth	Stacy, H. J., Leavenworth	1st Monday
Lincoln	H. L. Hinkley, Barnard	M. Newlon, Lincoln	1st Monday
Linn	D. E. Green, Pleasanton	H. L. Clarke, LaCygne	2nd Thursday
Lyon	C. L. Patton, Emporia	M. A. Finley, Emporia	1st Tuesday
Marion	J. H. Saylor, Marion	E. H. Johnson, Peabody	1st Tuesday
Marshall	McAllister, R. L., Marysville	Haerle, Henry, Marysville	2nd Wednesday
Meade-Seward	F. W. Huddleston, Liberal	Trekell, E., Liberal	Last Thurs., July, Oct., Jan., Apr.
Miami	Lowe, O. C., Paola	Fowler, J. F., Osawatomie	Second Tuesday
Mitchell	W. H. Cook, Beloit	Madtson, Martha, Beloit	
Montgomery	White, M. L., Coffeyville	Pinkston, J. A., Independence	
McPherson	W. C. Heaston, McPherson	G. R. Dean, McPherson	2nd Wednesday
Nemaha	F. S. Deem, Oneida	Murdock, S., Jr., Sabetha	
Neosho	L. D. Johnson, Chanute	A. M. Garton, Chanute	Last Thursday every other month
Osborne	J. D. Johnson, Alton	T. H. Smith, Osborne	Second Monday
Ottawa	L. M. Hinshaw, Bennington	C. M. Vermillion, Minneapolis	
Pawnee	G. S. Weaver, Larned	C. E. Sheppard, Larned	
Pratt	E. M. Ireland, Pratt	W. F. Bernstorf, Pratt	2nd Tuesday
Reno	F. W. Koons, Nickerson	C. A. Boyd, Hutchinson	1st Monday
Republic	C. V. Haggman, Scandia	H. D. Thomas, Belleville	4th Friday
Rice	Trueheart, M., Sterling	Little, J. M., Sterling	2nd Thursday in November
Riley	Schoonhoven, R. G., Manhattan	Colt, J. D., Jr., Manhattan	First Monday
Rush-Ness	Roy Russell, Ness City	W. Singleton, McCracken	First Monday
Saline	Seitz, G. W., Salina	Dillingham, W. R., Salina	
Sedgwick	E. D. Carter, Wichita	Frances H. Schiltz, Wichita	1st and 3rd Tuesdays
Shawnee	J. G. Stewart, Topeka	Brown, Earle G., Topeka	1st and 3rd Tuesday
Smith	D. W. Relihan, Smith Center	V. E. Watts, Smith Center	1st Monday
Stafford	M. M. Hart, Macksville	J. T. Scott, St. John	Second Thursday
Sumner	J. R. Burnett, Caldwell	I. H. Dillon, Wellington	2nd Wednesday
Washington	H. D. Smith, Washington	W. M. Earnest, Washington	Last Thursday every quarter
Wilson	B. P. Smith, Neodesha	E. C. Duncan, Fredonia	
Woodson	S. H. Murphy, Yates Center	A. C. Dingus, Yates Center	2nd Monday
Wyandotte	Asbell, E. L., Kansas City	Lucas, R. T., Kansas City	Every 2nd Tues. ex. summer months

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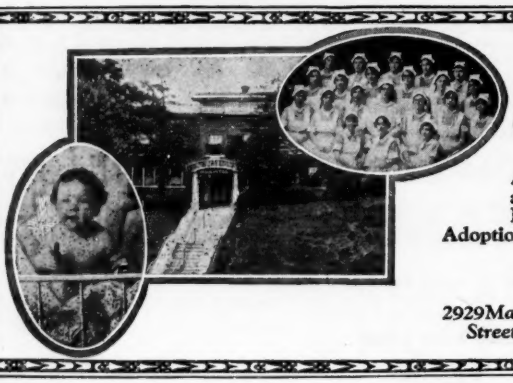

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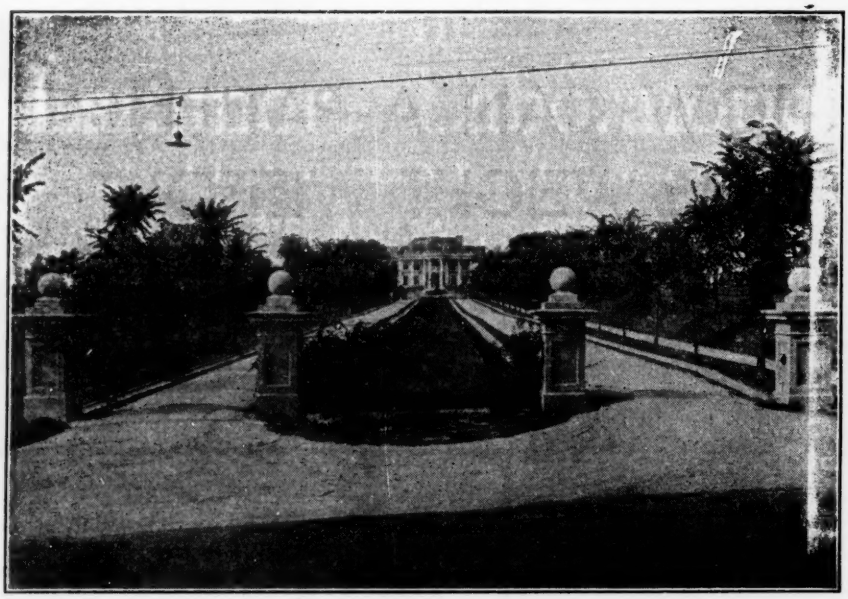

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